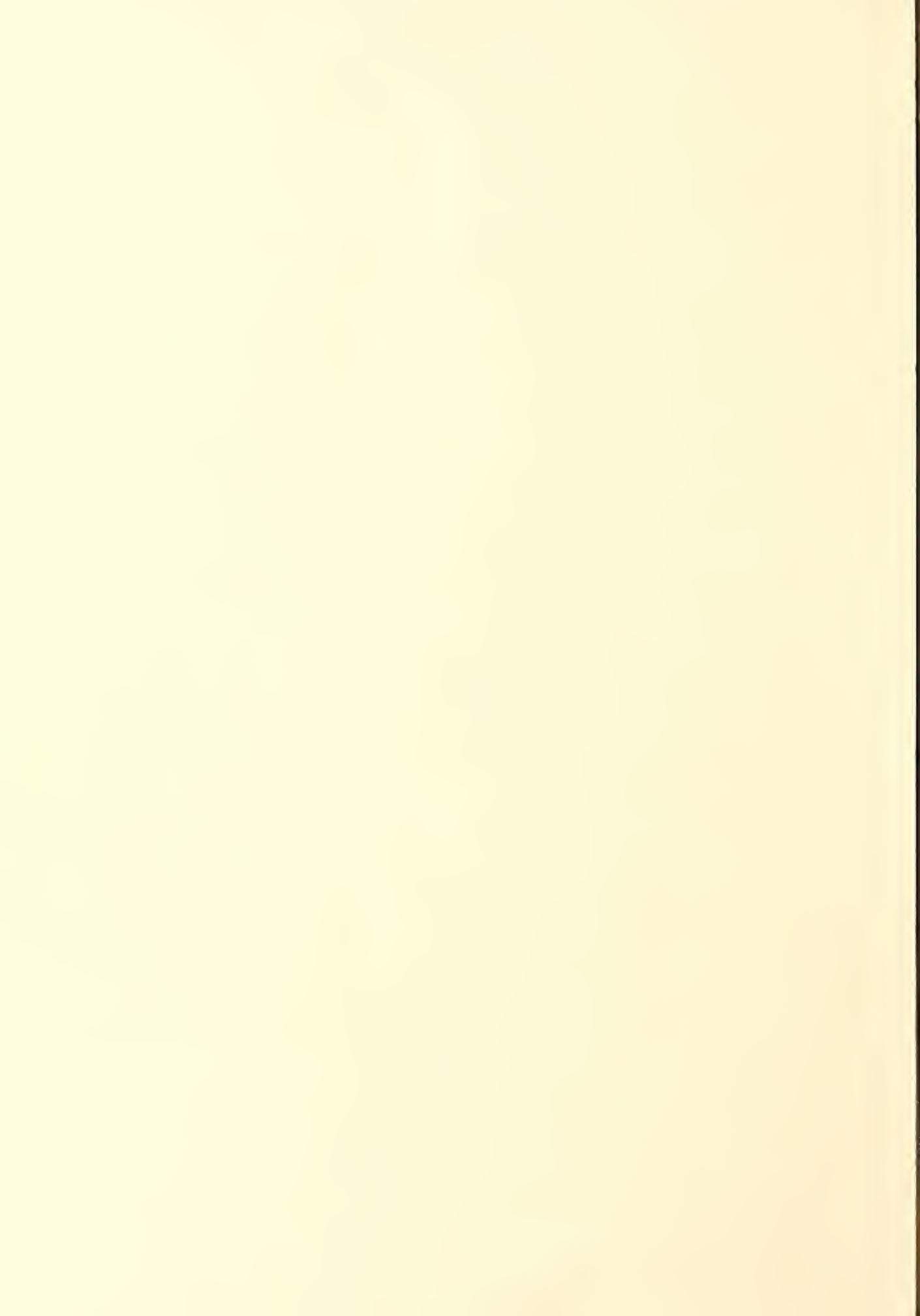


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Volume I

EXPLANATORY NOTES

for

DEPARTMENT OF AGRICULTURE

Fiscal Year

1958

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PREFACE

Project statements -

The obligations shown in the Project Statements are on the basis of the appropriations and activities proposed in the 1958 Budget Estimates, and in some instances the activities reflected in the Project Statement are further divided into subcategories, reflecting a more detailed description of the work conducted under the appropriation items.

It should be noted that the obligations reflected as subcategories in the Project Statements as well as those in the Supplementary Project Statements are generally not obtained directly from accounting records that are formalized by specific account classifications. Therefore, such amounts represent in most instances the best approximation of the amounts indicated. Wherever it has been necessary, because of the nature of the activity, to distribute certain costs which are not directly available from the accounts, every effort has been made to allocate such charges as accurately as possible based on past experience, periodic time reports, or other factors.

Explanation of increases requested for additional costs of contributions to the retirement fund in fiscal year 1958 pursuant to Public Law 854, approved July 31, 1956 -

The budget estimates for 1958 include requests for increases to cover part of the cost to the Department of contributions to the civil service retirement and disability fund as required by Public Law 854, approved July 31, 1956. These increases are specifically set forth under each appropriation item concerned. However, in order to avoid unnecessary repetition throughout the Explanatory Notes, the following explanation, common to all such increases, is provided here rather than under each appropriation involved. In a few instances where special circumstances are involved, a detailed explanation is given in the justification for the item concerned.

The Civil Service Retirement and Disability Fund is used to pay annuities to retired employees or their survivors, to make refunds to former employees who have left the service, and to pay claims for employees who have died before their annuities are paid in full. These costs are shared by the employees, through payroll deductions, and by the Government. For fiscal year 1957 and prior years the Government's share of the cost was financed by a lump-sum annual appropriation covering the Government's share of net cash disbursements from the fund. A large part of the Government's share of total accrued liabilities remained unfunded each year. In order to place the fund more nearly on a pay-as-you-go basis, and to associate the Government's share of the cost more directly with the various programs, Public Law 854 (Sec. 4(a)) increased employee contributions from 6% to 6½%, and provides that from and after the first pay period which begins after June 30, 1957 each agency shall deposit in the civil service retirement fund an amount equal to the retirement contributions deducted from employees' salaries.

The Explanatory Notes reflect under each appropriation affected the total estimated cost of the retirement contributions to be made to the retirement fund during fiscal year 1958. The additional costs will be absorbed to the maximum practicable extent. Additional appropriations are being requested only to cover that part of the retirement contribution cost that cannot be absorbed without reducing program operations below the level required to effectively carry out the Department's responsibilities. Additional funds requested for retirement costs applicable to the base for 1958 are reflected in a separate column in the Project Statement for each appropriation. Retirement costs applicable to program increases requested for 1958 are included in each item of increase, and the Project Statement also indicates separately the retirement costs included in such increases.

The estimated costs of contributions to the civil service retirement fund for fiscal year 1958 are based on 25 pay periods since such contributions will not be made for the first of the 26 pay periods occurring in fiscal year 1958, inasmuch as this period will begin on June 30, 1957. The costs were computed on the basis of 6 1/2% of the estimated net basic salary costs for the last 25 pay periods in 1958 of employees subject to the Civil Service Retirement Act of 1930, as amended. Net basic salary costs were computed on the basis of basic salary rates established by law for budgeted positions, adjusted for estimated lapses due to delay in filling vacant positions, leave without pay, reallocation of positions, and other factors where appropriate.

The 1958 Budget reflects amounts totaling \$26,610,077 for estimated payments by the Department to the retirement fund in the fiscal year 1958 from all appropriations and funds available, including revolving funds, advances and reimbursements from other agencies and trust funds. The estimated amount payable from appropriations and authorizations contained in the appropriation bills is \$24,672,425, of which \$1,625,555 relates to program increases requested for 1958 and included as a part of the respective increases in the detailed justifications. The remaining \$23,046,870 represents retirement costs applicable to the base for 1958 for items in appropriation acts, and net additional funds requested therefor are, as follows:

	Total retirement costs applicable to 1958 Base	Estimated Absorptions	Increases requested to meet costs on 1958 Base
Total, Department of Agriculture	\$23,046,870	\$467,538	\$22,579,332
Deduct Forest Service	<u>2,527,713</u>	<u>27,913</u>	<u>2,499,800</u>
Net total (excluding Forest Service)	<u>20,519,157</u>	<u>439,625</u>	a/ <u>20,079,532</u>

a/ Includes increase of \$1,398,042 in limitation on administrative expenses of the Commodity Credit Corporation.

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AGRICULTURAL RESEARCH SERVICE

Purpose Statement

The Agricultural Research Service was established by the Secretary of Agriculture on November 2, 1953 under the authority of Sec. 161, Revised Statutes (5 U.S.C. 22), Reorganization Plan No. 2 of 1953 and other authorities. It conducts all of the production and utilization research of the Department (except forestry research), and the inspection, disease and pest control and eradication work closely associated with this research. The Administrator of this Service is also responsible for the coordination of all research of the Department.

The program of the Agricultural Research Service is organized under three areas of activity as follows:

1. Research is conducted under five major categories:
(a) Crop research; (b) Farm and land management research;
(c) Livestock research; (d) Home economics research; and
(e) Utilization research.
2. Regulatory activities are conducted under three major categories:
(a) Plant disease and pest control; (b) Animal disease and pest control; and (c) Meat inspection.
3. The Service administers the Federal-grant funds for research at the State Agricultural Experiment Stations and operates experiment stations in Puerto Rico, Virgin Islands, and Alaska.

The Agricultural Research Service also carries out emergency programs, when necessary, for the control and eradication of animal diseases, such as foot-and-mouth disease and vesicular exanthema of swine, and for the control of emergency outbreaks of insects and diseases. In addition, research is conducted on the feasibility of developing domestic sources of supplies for agricultural materials designated as strategic and critical. Research on foot-and-mouth disease is conducted at Plum Island, New York in facilities made available to this Department by the Department of the Army and, in 1957, will be carried on in the new laboratory for which \$10 million was provided in the Urgent Deficiency Appropriation Act, 1952.

The Agricultural Research Service maintains a central office in Washington, D. C., and operates the 12,000 acre Agricultural Research Center at Beltsville, Maryland. However, most of the work is conducted at approximately 450 other locations in the United States, Territories and Possessions and several locations in foreign countries. Much of the work is conducted in cooperation with the State Agricultural Experiment Stations and with other agencies, both public and private. On November 30, 1956, there were 14,421 full-time employees, of which 3,073 were in the Washington Metropolitan area and 11,348 were located at other points in the United States, Territories and Possessions, and foreign countries.

	Appropriated, 1957	Budget Estimate, 1958
Appropriated funds:		
Salaries and expenses:		
Research	\$49,972,000	\$56,910,000
Plant and animal disease and pest control	a/28,794,000	26,952,000
Meat inspection	15,650,000	18,718,000
Total	<u>94,416,000</u>	<u>102,580,000</u>
State experiment stations:		
Payments to States, Hawaii, Alaska and Puerto Rico	29,503,708	34,003,708
Penalty Mail	- -	250,000
Total	<u>29,503,708</u>	<u>34,253,708</u>
Diseases of animals and poultry:		
Research	3,500,000	3,640,000
Animal disease laboratory facilities	b/16,250,000	- -
Total appropriated funds	<u>143,669,708</u>	c/ <u>140,473,708</u>

a/ Includes \$1,250,000 made immediately available in fiscal year 1956 for control of Medfly.

b/ Excludes \$221,079 of fiscal year 1956 appropriation of \$250,000 available for obligation in 1957.

c/ In addition, the 1958 budget proposes an appropriation to reimburse the Commodity Credit Corporation for funds advanced and expenses incurred in fiscal year 1956 with interest thereon through June 30, 1957 for (1) eradication of vesicular exanthema of swine (\$1,853,450) and (2) for the intensified brucellosis eradication program (\$16,728,210). These items are included in these justifications under "Special activities".

Summary of Appropriations, 1957, and Estimates, 1958

Appropriation Item	Total Appropriated, 1957	Budget Estimates, 1958	Increase or Decrease
Salaries and expenses, Agricultural Research Service:			
Research	\$49,972,000	\$56,910,000	+\$6,938,000
Plant and animal disease and pest control	a/ 28,794,000	26,952,000	- 1,842,000
Meat inspection	15,650,000	18,718,000	+ 3,068,000
Total, Salaries and expenses, ARS ..	94,416,000	102,580,000	+ 8,164,000
State Experiment Stations, Agricultural Research Service:			
Payments to States, Hawaii, Alaska, and Puerto Rico	29,503,708	34,003,708	+ 4,500,000
Penalty mail	- -	250,000	+ 250,000
Total, State Experiment Stations, ARS	29,503,708	34,253,708	+ 4,750,000
Diseases of animals and poultry:			
Research	3,500,000	3,640,000	+ 140,000
Eradication activities	b/ - -	b/ - -	- -
Animal disease laboratory facilities .	c/ 16,250,000	- -	-16,250,000
Research facilities for foot-and- mouth and other diseases of animals at Plum Island, N. Y.	d/ - -	- -	- -
Total	143,669,708	140,473,708	- 3,196,000
<u>Special Activities</u>			
Research on strategic and critical agricultural materials	314,000	325,000	+ 11,000
Reimbursements to Commodity Credit Corporation for advances for animal disease eradication activities:			
For eradication of foot-and- mouth disease	e/ 1,269,330	- -	- 1,269,330
For eradication of vesicular exanthema of swine	- -	f/ 1,853,450	+ 1,853,450
For brucellosis eradication	e/ 11,791,624	f/ 16,728,210	+ 4,936,586
Total, Reimbursements to Commodity Credit Corporation	13,060,954	18,581,660	+ 5,520,706
Total, Special Activities	13,374,954	18,906,660	+ 5,531,706

- a/ Includes \$1,250,000 made immediately available for control of Mediterranean fruit fly. Of this amount, \$987,445 was obligated in 1956.
- b/ Authority to make transfers from other funds available to the Department to finance the eradication of vesicular exanthema in swine was provided in 1957 in the amount of \$1,550,000, and \$1,270,000 is proposed in 1958.
- c/ In addition, a balance of \$221,079 of the \$250,000 appropriated in 1956 for preliminary planning is also available in 1957.
- d/ It is estimated that entire unobligated balance of \$785,617 brought forward from prior years will be obligated in fiscal year 1957. The facilities were dedicated on September 26, 1956.
- e/ To cover unreimbursed expenses through fiscal year 1955, including interest thereon through June 30, 1956.
- f/ To cover unreimbursed expenses through fiscal year 1956, including interest thereon through June 30, 1957.

(a) Salaries and Expenses

		Plant and Animal		
	Research	Disease and Pest Control	Meat Inspection	Total
Appropriation Act, 1957 ..	\$49,972,000	\$26,294,000	\$15,650,000	\$91,916,000
Supplemental Appropriation Act, 1957	- -	2,500,000	- -	2,500,000
Base for 1958	49,972,000	28,794,000	15,650,000	94,416,000
Budget Estimate, 1958	56,910,000	26,952,000	18,718,000	102,580,000
Increase or Decrease	+6,938,000	-1,842,000	+3,068,000	+8,164,000

SUMMARY OF INCREASES AND DECREASES, 1958

Research:

A net decrease under <u>horticultural crops research</u> consisting of a reduction of \$775,000 due to elimination of nonrecurring amounts in the 1957 appropriation for construction of a National Seed Storage Laboratory (\$450,000) and of a horticultural, soil and water research laboratory in the Rio Grande Valley of Texas (\$325,000), partially offset by increases of \$181,000 to strengthen the plant disease warning service to growers and to expand research on plant disease organisms (\$78,000), and to staff the new National Seed Storage Laboratory (\$103,000)	-594,000
To expand <u>entomology research</u> on biological methods and commodity and other treatments for controlling destructive insects	+208,000
For <u>soil and water conservation research</u> to increase efficiency in water management in relation to irrigation (\$424,000); to conduct soil and water research in the Upper Colorado River Basin (\$208,000); to expand research in watershed hydrology (\$208,000); to provide facilities for expanded sedimentation research in the South (\$600,000); and for construction, alteration, and equipment of buildings at the U. S. Salinity Laboratory, Riverside, California (\$125,000)	+1,565,000

To strengthen <u>agricultural engineering research</u> by developing and improving equipment and methods for application of chemicals to control insects, diseases, and weeds in growing crops (\$146,000); and by expanding engineering research on harvesting and handling new crops (\$104,000)	+250,000
To strengthen <u>production economics research</u> to provide economic guides for development and appraisal of farm programs and research on financial condition, land ownership, and tax burden on different groups of farmers (\$731,000); and for economic studies of irrigation in the Upper Colorado River Basin (\$104,000)..	+835,000
For expanding <u>animal and poultry husbandry research</u> by strengthening research on the development of improved types of sheep on farms (\$155,000); and by providing urgently needed buildings and facilities at the U. S. Range Livestock Experiment Station, Miles City, Montana (\$145,000); and at the U. S. Sheep Experiment Station, Dubois, Idaho (\$250,000); partially offset by the elimination of a nonrecurring amount in the 1957 appropriation for the construction of a modern centralized poultry brooder house at Beltsville, Maryland (-\$225,000)	+325,000
To expand and improve the dairy herd improvement and sire-proving programs	+154,000
To strengthen research on animal parasites	+308,000
To expand research on urgent problems of fat in human nutrition	+200,000
To expand research on serviceability and maintenance of clothing fabrics	+53,000
To expand utilization research on wheat, other small grains, and corn to provide information needed to encourage increased use in industrial products and feeds	+770,000
To expand utilization research on cotton and other fibers by developing new and improved cotton fibers, fabrics, processes, and processing machinery to strengthen the markets for cotton (\$365,000); by expanding research on utilization of wool and mohair (\$400,000); and by constructing a building urgently needed for processing research on wool at the Western Utilization Research Laboratory, Albany, California (\$105,000)	+870,000
A net decrease under fruits and vegetables utilization research consisting of elimination of a non-recurring amount in the 1957 appropriation of \$785,000 for construction of a laboratory at Winter Haven, Florida for research on citrus and other fruits and vegetables, partially offset by an increase of \$181,000 to strengthen the market for surplus fruits, nuts, and vegetables by development of processed products of improved quality, stability, and convenience, and byproducts of greater value	-604,000

To expand utilization research on linseed oil and cotton-	
seed oil and meal	+260,000
To expand utilization research on animal fats	+104,000
Net increase for research	<u>+4,704,000</u>

Plant and animal disease and pest control:

A reduction of \$4,080,000 under the Contingency Fund	
for control of emergency outbreaks of insects and	
plant diseases, partially offset by increases to	
evaluate registered labeling on marketed products	
for compliance with the Federal Food, Drug, and	
Cosmetic Act, as amended (\$120,000) and for the	
construction of a greenhouse and headhouse at	
Beltsville, Maryland for testing work under the	
Federal Insecticide, Fungicide, and Rodenticide	
Act (\$30,000)	-3,930,000
To strengthen plant quarantine inspection services	+520,000
To strengthen the diagnosis, control, and eradication	
of miscellaneous livestock diseases	+240,000
To provide greater inspection coverage to establishments	
producing veterinary biologics and to strengthen the	
testing of such products (\$204,000), and for the con-	
struction of facilities for livestock inspection at	
four ports of entry (\$156,000)	+360,000
Net decrease for plant and animal disease and	
pest control	<u>-2,810,000</u>

Meat Inspection:

To meet an increasing work load on the meat inspection	
service, for higher pay costs due to changes in position	
standards, and for furnishing washable outer garments	
to inspectors	+2,132,000
For contribution to the retirement fund pursuant to P.L. 854	+4,138,000
Total net increase, Salaries and Expenses	<u>+8,164,000</u>

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement	Other	
			Costs (P.L. 854)		
1. Research					
a. Crops research:					
(1) Field crops	\$5,651,872	\$7,158,760	\$+319,340	- -	\$7,478,100
(2) Horticultural crops..	3,920,620	5,325,930a	+197,770	\$-594,000 (1)	4,929,700
(3) Entomology	4,330,030	4,833,500	+237,900	+208,000 (2)	5,279,400
Total, crops research ...	13,902,522	17,318,190a	+755,010	-386,000	17,687,200
b. Farm and land management research:					
(1) Soil and water conservation ...	3,841,559	5,391,110	+252,290	+1,565,000 (3)	7,208,400
(2) Agricultural engineering..	1,663,587	1,980,500	+86,500	+250,000 (4)	2,317,000
(3) Production economics ...	1,642,594	2,526,400	+129,400	+835,000 (5)	3,490,800
Total, farm and land management research	7,147,740	9,898,010	+468,190	+2,650,000	13,016,200
c. Livestock research:					
(1) Animal and poultry husbandry ...	2,644,598	3,350,100	+117,800	+325,000 (6)	3,792,900
(2) Dairy husbandry	1,483,041	1,671,000	+72,300	+154,000 (7)	1,897,300
(3) Animal disease and parasite	2,476,000	2,874,300	+112,600	+308,000 (8)	3,294,900
Total, livestock research	6,603,639	7,895,400	+302,700	+787,000	8,985,100
d. Administration of payments to States, and Territorial research:					
(1) State experiment stations:	168,820	222,200	+46,300	- -	268,500
(2) Territorial experiment stations	595,855	618,800	+24,600	- -	643,400
Total, administration of payments to States, and Territorial research ..	764,675	841,000	+70,900	- -	911,900

(Continued on next page)

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement	Costs	
			(P.L. 854)	Other	
e. Home economics research:					
(1) Human nutrition	704,246:	913,730:	+42,470	+200,000 (9)	1,156,200
(2) Household economics ...	468,249:	549,370:	+25,730	- -	575,100
(3) Clothing and housing	356,854:	362,200:	+18,100	+53,000(10)	433,300
Total, home economics research ..	1,529,349:	1,825,300:	+86,300	+253,000	2,164,600
f. Utilization research:					
(1) Cereal and forage crops	1,753,103:	2,162,680:	+104,720	+770,000(11)	3,037,400
(2) Cotton and other fibers	1,712,027:	2,112,000:	+104,900	+870,000(12)	3,086,900
(3) Fruits and vegetables ..	2,004,476:	2,811,350:	+95,950	-604,000(13)	2,303,300
(4) Oilseeds ..	1,173,022:	1,194,700:	+59,500	+260,000(14)	1,514,200
(5) New and special plants:	936,852:	1,457,090:	+71,310	- -	1,528,400
(6) Poultry, dairy, and animal products	1,895,920:	2,456,280:	+114,520	+104,000(15)	2,674,800
Total, utilization re-					
search	9,475,400:	12,194,100:	+550,900	+1,400,000	14,115,000
Total, research:	39,423,325:	49,972,000:	+2,234,000	+4,704,000	56,910,000
2. Plant and animal disease and pest control					
a. Plant disease and pest control:					
(1) Plant pest control	7,854,884:	15,357,700b/:	+303,900	-3,930,000(16)	11,731,600
(2) Plant quarantine	3,112,167:	4,087,200	+227,800	+520,000(17)	4,835,000
Total, plant disease and pest control:	10,967,051:	19,444,900	+531,700	-3,410,000	16,566,600

(Continued on next page)

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement		
			Costs (P.L. 854)	Other	
b. Animal disease and pest control:					
(1) Animal disease control and eradication	7,707,398	7,936,400	+357,600	+240,000(18)	8,534,000
(2) Animal quarantine	1,383,547	1,412,700	+78,700	+360,000(19)	1,851,400
Total, animal disease and pest control:	9,090,945	9,349,100	+436,300	+600,000	10,385,400
Total, plant and animal disease and pest control:	20,057,996	28,794,000	+968,000	-2,810,000	26,952,000
3. Meat Inspection	15,217,643	15,650,000	+936,000	+2,132,000(20)	18,718,000
Unobligated balance	1,025,178	- -	- -	- -	- -
Total retirement costs (P.L. 854) ..	- -	- -	[4,168,000]	[+311,000]	[4,479,000]
Total available or estimate	75,724,142	94,416,000	+4,138,000	+4,026,000	102,580,000
Transferred from "Foot-and-Mouth and other contagious diseases of animals and poultry, Agricultural Research Service, research":	-47,000	- -			
Transfers in 1957 estimates to other accounts	+22,778	- -			
Total appropriation or estimate	75,699,920	94,416,000			

a/ Does not reflect \$6,527 of fiscal year 1956 funds for obligation by Bureau of Public Roads in fiscal year 1957 for supervision of road construction contract let in fiscal year 1956, (11 Comp. Gen.--#A-43067).

b/ Includes \$987,445 obligated for control of Medfly in fiscal year 1956 from 1957 appropriation which provided that \$1,250,000 be immediately available for expenditure in fiscal year 1956 for such purpose.

INCREASES AND DECREASES

(1) Net decrease of \$594,000 under the activity "Horticultural Crops Research" composed of:

(a) A reduction of \$775,000 due to the elimination of nonrecurring items in the 1957 appropriation for construction of buildings as follows:

Construction of a National Seed Storage Laboratory	\$450,000
Construction of a horticultural, soil, and water research laboratory in the Rio Grande Valley of Texas	325,000
Total decrease	<u>775,000</u>

This reduction is partially offset by two proposed increases, totaling \$181,000, as follows:

(b) An increase of \$78,000 to strengthen the plant disease warning service to growers and to expand basic research on plant disease organisms.

Need for Increase: In the United States the average annual loss from plant diseases is estimated at three billion dollars. All plants used by man have diseases, many of which are limiting factors in production of the crop involved. The Plant Disease Reporter, a processed monthly periodical now in its 40th volume, is the medium for dissemination of current information on plant diseases to interested plant pathologists, extension agents, and others interested in plant disease problems and plant disease control work. It provides prompt and effective publication of data from State and Federal workers which in turn is made available to growers through newspapers and other information media. Although an ever-increasing amount of valuable information is received for publication, much of it cannot be published within the limited funds available for this work. Moreover, the distribution list is limited for the same reason. A more comprehensive report which would make important information on the distribution and behavior of diseases of economic crops available promptly, as well as wider distribution of this valuable periodical is urgently needed.

A closely related need is for expansion of basic fungi studies and of mycological services available to the plant pathologists working with the various crops. More than 20,000 plant diseases are due to fungi alone.

The National Fungus Collections, started by the Department in 1869, has become one of the largest in the world. It contains over 500,000 specimens and extensive supporting files of mycological information. Because of limited funds this research program has suffered seriously in recent years. Extensive accessions have been added recently to an already large backlog of material awaiting study and insertion in the National collections. It is important that this work be brought up to date and maintained on a current basis so that it can more effectively serve Federal, State, and other workers concerned with plant disease problems.

Plan of Work: Information disseminated by the Plant Disease Reporter would be expanded through cooperation with plant pathologists throughout the country, and wider distribution of information would be made. The plant disease warning service would be greatly strengthened so that growers may take appropriate preventive measures.

An active basic research program on fungi causing plant diseases would be provided. The organized collections and supporting files would be maintained on a current basis. A more effective identification service would also be provided for Federal and State workers.

(c) An increase of \$103,000 for staffing and operating the National Seed Storage Laboratory.

Need for Increase: It is expected that the National Seed Storage Laboratory being constructed at the Colorado A. & M. College, Fort Collins, Colorado with \$450,000 appropriated for that purpose in fiscal year 1957 will be completed and ready for full operation in fiscal year 1958. Increased funds are needed to staff and operate the laboratory.

The laboratory will provide this country with centralized facilities for maintaining valuable germ-plasm in the form of seed for use in future breeding programs; and for holding, as a Federal reserve, stocks of the most valuable varieties against degeneration, attack through biological warfare, and as a continuing source of supply for breeding programs. The cost of repeatedly exploring for or recollecting important breeding material, when possible, is far greater than maintaining a viable stock once it is in hand. In the past, lack of adequate storage has resulted in complete or partial loss of many lines of breeding material.

Plan of Work: The staff would maintain stock, revitalize it periodically as required, and initiate research to determine optimum factors contributing to long storage life and maximum viability. Such factors would include temperature, modified atmosphere, and special treatments.

Thousands of collections of seed, now being held in temporary storage at Federal and regional headquarters and by State and private research institutions, would be moved to the laboratory, and arrangements would be made for selection of valuable stocks for future collection and storage. Seed received by the laboratory would be documented as to origin and history. In no case will seed be held for the exclusive use of any donor.

Germination tests on seed received would begin as soon as the laboratory goes into operation. Research on seed viability and other related storage problems would be initiated in conjunction with germination tests. Contractual arrangements would be made for the increase of seed necessary to supply demands and to preserve viable stocks.

(2) An increase of \$208,000 under the activity "Entomology Research" to expand research on biological methods and commodity and other treatments for controlling destructive insects.

Need for Increase: There is urgent need to develop ways to utilize biological control agents to replace or supplement other control methods for a variety of destructive insects which cause tremendous annual losses. Although many insects are now effectively controlled by insecticides, chemical control for others is costly or impractical. Many disadvantages and acute problems have been encountered as a result of the increasingly widespread use of various insecticides during the past 15 years. Insect control by insecticides is often costly and may lead to excessive residues on foods. In

addition, these chemicals applied for the control of one pest may destroy existing natural enemies of other insects and cause heretofore minor species to become of major importance. The effect of insecticides on honey bees is causing increasing concern to beekeepers and producers of crops that are dependent on these insects for adequate pollination.

Insect control through the use of biological control agents--parasites, predators, and disease agents--would materially reduce crop production costs and at the same time avoid the acute problems resulting from the use of insecticides. Introduced natural enemies now successfully control the mealy bug, and aid materially in controlling the Japanese beetle, European corn borer, citrus blackfly in certain areas of Mexico, red scale, and other pests. Insects, like higher animals, are affected by viruses, bacteria, fungi, protozoa, nematodes, and other disease-producing organisms. The use of such insect pathogens as biological agents to control insects offers great promise even though research in this area has been extremely limited. It has been demonstrated that the Japanese beetle, alfalfa caterpillar, and European pine sawfly can be controlled by distributing disease organisms. Highly virulent disease organisms have been found that affect other major pests but their practical value has not been determined.

One important means of insect spread is through the shipment of infested commodities such as fruits, vegetables, soils, and plant refuse. The continuing development of more rapid means of transporting such commodities has provided increasing opportunities for insects to spread. For example, it is probable that the spread of the Mediterranean fruit fly to Florida resulted from infested fruit; the introduction of the Japanese beetle no doubt resulted from the shipment of infested soils around plants. There is an urgent need to expand research on the development of more effective and economical methods for destroying insects in the field and in commodities to permit their movement into commerce without spreading insect pests. In developing ways to destroy insects in commodities it is necessary to insure that no harm will result to the commodity.

Plan of Work: Search for parasites and predators would be expanded, particularly in Europe and in the Near and Far East, for use against destructive insect pests. Additional research would be undertaken to utilize parasites to control various crop-destroying insects including the spotted alfalfa aphid, army worm, Mexican bean beetle, tobacco budworm, corn earworm, and sugarcane borer. Research would also be initiated or expanded on insect diseases including those of the cabbage looper, codling moth, corn earworm, tent caterpillar, armyworm, and certain mites and aphids. Various fumigants, heat treatments, mechanical equipment, and other methods would be studied to develop new and improved methods of killing insects in fruits, vegetables, soil, and plant refuse. The expanded program would include more intensive studies both in the laboratory and in the field. Much of the work would be in cooperation with State agricultural experiment stations.

(3) Increase of \$1,565,000 under the activity "Soil and Water Conservation Research" composed of:

(a) Increase of \$424,000 to expand research on increased efficiency in water management in relation to irrigation.

Need for Increase: Federal, State, and local governmental units as well as private organizations and individuals spend large sums for structures and other measures to control or manage water. The annual water bill of the Nation's farmers is estimated at about \$200 million. Farmers need more information on methods of reducing water losses from canals and laterals, on water requirements of crops, and on methods of water application and distribution to prevent waste and avoid drainage problems. There is urgent need to expand research to increase efficiency of (1) irrigation and water use in the humid areas of the United States and (2) water management in the arid areas.

In the humid areas the rapid increase in irrigation requires an expanded research program to assure efficient utilization of the limited water supplies for which competitive uses are increasing. The Soil Conservation Service, in supplying technical assistance on irrigation, relies upon sound irrigation guides and water supply design schedules to assure technically sound and efficiently designed irrigation systems. As of December 31, 1954, the Soil Conservation Service estimated that in the Eastern States the demand for sprinkler irrigation systems exceeded a hundred thousand. They further estimated the need for improved irrigation water management on nearly six million acres in the near future.

Planning of technically adequate programs on such a large scale requires precise and accurate design data to assure maximum efficiency in water application. Studies must be extended to determine the relation of soil water stress for different forage and horticultural crops under varying soil conditions. Detailed studies are needed of the influence of soil structure on release of moisture to plants, and evaluation of the tolerance of various plants to varying periods of moisture deficiency or excess under a range of climatic conditions. Methods of improving infiltration, percolation, and water table control are needed. More efficient and more effective methods of conveying and applying irrigation water under varying soil and topographic conditions are needed throughout the humid area.

Delay in expanding this program would result in the design and installation of many systems which would be inadequate or unnecessarily costly because they would be based on personal judgment rather than on specific values. Frequently, in order to provide an adequate factor of safety, farmers install irrigation systems that are more costly than would be necessary if adequate design data were available.

In the arid areas, in many instances, as much as three-fourths of the water diverted from the streams is lost before it reaches the soil root zone. It is well known that most western water supplies already are overallocated. The water lost by seepage, poor on-farm distribution,

and over-irrigation represents not only a loss of water and unnecessary cost to the irrigation farmer but in many instances it is the primary cause of high water table, salt accumulation, and eventual abandonment and loss of the soil resource.

Farmers need more information on methods of reducing water losses and on methods of water application and distribution on farm fields. Where high water table conditions are developing and salinity and alkali are encroaching, drainage methods must be found to remove the excess water and thus reduce the cost of farm operations and conserve the soil resource for future use. Farmers also need more information on water requirements by plants as related to climate, as well as soil properties affecting water storage and its extraction by plants. For example, in the Lower Rio Grande Valley of Texas, older ranchers state that when the soils were first farmed, one irrigation produced a good cotton crop. Now, farmers irrigate four to seven times. It is questionable whether added irrigations and the attendant increased cost to the farmer is necessary. Research to date has not adequately attacked the fundamental principles involved. These problems, associated with dwindling water supplies, are becoming increasingly critical each year. Delay in this kind of research will involve continued inefficiencies and high costs to farmers.

Plan of Work: The research under this increase would be planned and conducted in cooperation with the State agricultural experiment stations.

In the humid areas data would be developed on soil moisture release curves and other basic soil-water-plant relationships for a number of the more important soils under irrigation. Results of these studies would be used in developing, in cooperation with the Soil Conservation Service and State agencies, Irrigation Guides on water-holding capacities of soils, infiltration and percolation rates, and rates of evapo-transpiration. Attention would also be given to modification and improvement of soil and crop management practices that would facilitate the efficient use of irrigation water. Emphasis would later be placed on methods of developing and improving water sources, and increasing the efficiency of conveyance and distribution of water under humid region soils and topographic conditions. Research in Georgia, Illinois, Missouri, Mississippi, New Jersey, North Carolina, and Virginia would be expanded and strengthened.

To meet the needs in the arid areas, existing work in water management and conservation on western irrigated lands would be strengthened. Immediate and continuing attention would be given to developing improved methods and practices for applying irrigation water; determining water requirements of agricultural crops for varying conditions of climate, soil, and water supply; devising principles and methods for investigating and correcting waterlogged conditions on irrigated lands; and determining the factors affecting water intake and storage in soils and its extraction by various plants as influenced by soil characteristics. Existing research would be strengthened in Colorado, Idaho, Montana, Nevada, North Dakota, Texas, and Utah.

(b) Increase of \$208,000 to intensify soil and water management research in the Upper Colorado River Basin.

Need for Increase: Under authority of Public Law 485, approved April 11, 1956, extensive plans are under way to speed up the development of the Upper Colorado River Basin. Predevelopment research, similar to that which has been done in the Columbia River Basin, is needed in order that settlers may be able to overcome soil management and irrigation problems when water is applied to the land. In this area, water is a more limiting resource than land suitable for irrigation. The soils of the Basin are highly variable; they are frequently derived from shale and other sedimentary rocks highly impregnated with salts. Hence, soils must be selected for irrigation with extreme care. There are large acreages of silty clay loam soils on which potential productivity is reduced by poor physical condition, low infiltration rates, and slow drainage. At present, there is insufficient information to serve as a guide on soil management and irrigation practices for crop production in the area to assure the development of successful irrigation agriculture.

Past experience in other areas has shown that predevelopment research could have prevented costly errors and loss of time and money. When new land is brought under irrigation, the bringing of water to the land is essential, but the mere application of water to land does not insure high crop yields or an economical agricultural enterprise. The farmers' problems actually just begin when water reaches the farm. They have all of the problems associated with how to apply the water to their land, how much to apply, when to irrigate, what crops and rotations should be used, fertilizer practices, insect control programs, practices to prevent salinity accumulation, drainage problems, and all of the others that are associated with successful irrigation farming. Delay in intensifying soil and water management research in the Basin would jeopardize the investments of prospective settlers and endanger establishment of successful farming. Related work, both State and Federally supported, is under way in other irrigated projects, but little or no emphasis has been directed toward the specific problems of the Upper Colorado River Basin.

Plan of Work: The research would be conducted in cooperation with the agricultural experiment stations of the Upper Colorado River Basin States and would be directed toward immediate and permanent solution of soil and water management problems incident to irrigation development. Types of studies receiving special emphasis would include: (1) physical and chemical properties of soils in relation to efficient crop production and water use; (2) nutritional needs of crops and crop adaptations to soil and climatic conditions of the area to be irrigated; and (3) management practices including tillage, crop rotations, and reclamation of saline and alkali soils.

It is proposed that one predevelopment farm, similar to those in the Columbia Basin, would be established in each of the States of Colorado, Utah, Wyoming, and New Mexico. The work would be cooperative with the Bureau of Reclamation and the State agricultural experiment stations.

Supplementing the field research program planned for the predevelopment farms would be a laboratory program in Colorado and Utah giving emphasis to studies of physical and chemical properties of soils in relation to efficient water use, alleviation of saline and alkali problems, and economical crop production in the Basin.

(c) Increase of \$208,000 to strengthen and expand research in watershed hydrology.

Need for Increase: More adequate hydrologic data are needed at the earliest possible date for the Department's rapidly expanding programs in soil and water conservation, especially in connection with activities under Public Law 566, approved August 4, 1954, and other phases of the program of the Soil Conservation Service. Research in the general field of watershed hydrology is given high priority in the list of research needs prepared by action agencies conducting watershed protection and flood prevention programs. The importance of basic data collection and research on water problems is further emphasized in the report by the Presidential Advisory Committee on Water Resources Policy issued in December 1955. Shortages of water for domestic, agricultural, and industrial uses; persistent recurrences of floods; erosion of uplands and stream systems; the deposition of sediment in streams and on flood plains; the filling of reservoirs; and the nuisances of streams polluted by the products of erosion are both costly and wasteful.

Additional information is needed on: (1) the behavior of water in response to various land treatment and watershed programs; (2) more efficient and economical ways to keep runoff water from causing excessive flood and sedimentation damage; (3) how to locate and control sources of silt and sand that are deposited in stream channels and reservoirs and on fertile farmland; and (4) perfected and generalized design for conservation structures that will be used in large numbers in the watershed and other phases of the soil and water conservation program.

There are practically no hydrologic data for agricultural watersheds for some parts of the country. The far West, where water plays such an important role in the regional economy, is a notable example. Many extensive soil and climatic areas in other parts of the country have pressing water problems for which virtually no hydrologic data are available as a basis for planning the most effective and economical remedial measures.

With current funds watershed hydrology research in problems of runoff, sedimentation, and hydraulics is under way at 20 locations in the country; and work is being initiated at new locations in Mississippi, Vermont, and the Northern Great Plains in the current fiscal year. It is apparent, however, that pressing problems need early attention in other locations and that there is an urgent need for strengthening the work at existing locations.

Plan of Work: The increase would be used to:

1. Initiate new watershed hydrology research in West Virginia and Idaho.
2. Strengthen and expand the work at existing locations in Montana, Nebraska, New Mexico, Ohio, Texas, Oklahoma, Minnesota, Vermont, Virginia, and Wisconsin. Effectiveness of work at these locations is definitely limited by the level of staffing which has been possible up to this time. Junior-grade professional personnel would be added for more effective utilization of facilities already established.
3. Establish a unit to provide leadership and guidance in a nationwide program of hydrologic data analysis and to make highly specialized compilations and interpretations. During the past two years emphasis has been given to assembly, compilation, and publication of the backlog of hydrologic data from agricultural watersheds at research stations across the country. The proposed unit would greatly facilitate analysis of data being collected currently and those accumulated over more than 20 years of research by the Department in the field of agricultural watershed hydrology.

(d) Increase of \$125,000 for construction and alteration of buildings at the U. S. Salinity Laboratory, Riverside, California.

Need for Increase: The physical plant of the U. S. Salinity Laboratory is seriously overcrowded at the present time and needs to be extended to provide for additional fundamental research on relationship of saline and alkali soils and irrigation waters to plant growth. Expansion of this fundamental work has been urged repeatedly by the National Association of Soil Conservation Districts and various advisory committees.

With the increasing development of irrigation agriculture, the problems of protecting soil resources from deterioration due to salt and alkali are becoming progressively more severe. Solutions to these problems require fundamental research upon which to base field measures for salinity control. Without this information, solution to field problems must often be based on costly trial-and-error procedures. Effective solution of many important problems of irrigation agriculture are being delayed because of the inadequate facilities, and this may result in the loss of considerable public and private investment in irrigation developments.

Under present conditions research on the fundamentals of water movement in soils is retarded by lack of space in which the essential control of temperature and other experimental conditions can be established. More space is also required for the increased use of radioactive isotopes needed in many phases of the program.

Plan of Work: The proposed expansion would provide for:

1. An additional one-story structure approximately 40' x 100', with partial basement to cost approximately \$100,000. This structure would be of reinforced concrete and would provide approximately 20 rooms for research in soil chemistry and for the administrative staff of the laboratory. Space in the present building now used by the administrative staff would be converted to laboratories for research in plant physiology, including the salt tolerance of plants. The estimate includes standard laboratory fixtures such as sinks, fume hoods, temperature controls, laboratory benches, etc.
2. Alteration of the present laboratory building at a cost of approximately \$25,000 to provide two large rooms and four small rooms for additional laboratories for research in problems related to the movement and retention of water in soils. Approximately 1,600 square feet of floor space would be provided through this extension of the present building.

(e) An increase of \$600,000 to provide facilities for expanded sedimentation research in the South.

Need for Increase: Sediment problems are widespread, but are particularly severe in the lower Mississippi Valley and in the Southeast. For example, estimates indicate average sediment damage in the Yazoo-Little Tallahatchie area of Mississippi of about \$2,500,000 a year. Agencies concerned with water management in the Department are in urgent need of expanded sedimentation research to guide the rapidly expanding watershed protection and flood prevention programs. The need for such research has been given the highest priority in the list of research problems.

Watersheds and streams in the Yazoo-Little Tallahatchie Basin of Mississippi present many examples of widespread sediment problems and afford unusual opportunities for sedimentation research on a field scale. It is proposed to establish facilities at Oxford, Mississippi, for correlated laboratory and field investigations on the fundamentals of sedimentation, including the processes of entrainment, transportation, and deposition of the products of erosion; and for development of techniques and formulas for relating the processes of sedimentation to the agricultural practices, applied soil and water conservation measures and the hydraulic, hydrologic, and physiographic characteristics of watersheds. Only very meager laboratory facilities are available for the current studies. The special facilities recommended would provide means to solve complex and intricate sediment problems encountered in watershed protection programs, and to cooperate in the development of special instruments and equipment as needed for solving sediment problems. Results of much of this research would be applicable to problems throughout the United States.

With increases for fiscal year 1957 there has been some expansion of sedimentation work in Mississippi. Field observations and measurements are being initiated on a series of watersheds in the Yazoo-Little

Tallahatchie Basin ranging in size from about 100 acres to about 135 square miles. Available funds, however, are not sufficient to install many of the needed field facilities.

Plan of Work: The increase would provide for establishment of the laboratory and for installation of additional field facilities.

The laboratory would have approximately 16,200 square feet of floor space for laboratories and offices. The proposed structure would be approximately 40' x 135' in over-all dimensions, with two floors and full basement. It would house about 45 workers, and would include space for analysis of properties of soil and sediment samples, and a hydraulics laboratory. Laboratories would include flumes, circulating pumps, model installations, flow measuring devices, facilities for controlling water temperatures, and related items.

A building for storage of automotive equipment, jeeps, trucks, and large pieces of field equipment would be provided.

A portion of this increase would also be used to install from 8 to 10 additional gaging stations on subwatersheds to obtain the desired representation in watershed sizes.

(4) Increase of \$250,000 under the activity "Agricultural Engineering Research" composed of:

(a) An increase of \$146,000 to develop and improve equipment and methods for application of chemicals for the control of insects, plant diseases, and weeds in growing crops.

Need for Increase: There is need for expanded engineering research on application of chemicals used for control of insects, plant diseases, and weeds to complement current research advances on use of such chemicals. Engineering research is also needed to complement that of biological scientists concerned with the possibilities, limitations, development, and improvement of tillage and cultivating equipment for the adequate distribution of soil insecticides and the control of soil insects.

The annual cost of chemicals used to control insects, diseases, and weeds is estimated at more than \$350 million. Improved equipment and equipment management giving a more accurately directed and uniform application might well reduce the amount of chemicals used by 5 to 10 percent. This could result in reducing costs as much as \$15 to \$30 million annually. Better controlled spray and reduction of drift would reduce materially excessive residues on crops.

Development and management of the most effective and economic ground and airplane equipment for the application of pesticides (insecticides, fungicides, herbicides, and growth regulators) under any given set of conditions is influenced by many variables such as the crop to be protected, stage of crop growth, cultural practices being used, kind of pest to be controlled, kind of pesticide being used, air movement, and temperature. For example, the most effective equipment design,

particularly the number, type, and arrangement of nozzles for control of insects attacking cotton, is directly affected by the type of plant growth which in turn is the result of such factors as variety, plant population per acre, soil conditions, water supply, and other growing conditions. While equipment has been developed to combat certain cotton insects under current cultural and management practices, the control attained, as with many other crops, is far from complete. As research brings about changes in cultural and management practices for more economic crop production and as new pests become important and new pesticides are developed, continuing engineering research will be needed to develop and adapt pesticide application equipment to these new practices and conditions.

Plan of Work: New research would be initiated on equipment for the control of insect pests and plant diseases on vegetable crops, sugarcane, sugar beets, potatoes, tree fruits, tobacco, and grain crops, including corn. Crops with specific needs for improvement of weed control equipment which would receive additional attention are cotton, peanuts, rice, sugar beets, and grain.

Phases of work which would be undertaken immediately consist of finding more effective means or producing spray droplets of uniform and controlled size; modification of present equipment to fit spraying needs under different combinations of pest, crop, chemical, season, air movement, temperature, and humidity for aerial, ground, and subsurface applications, and investigations of the possibility of using electrostatic charges for improving the adhesion of chemicals to plants.

New research projects would be initiated in California on improved equipment for application of pesticides to irrigated cotton, vegetable, and fruit crops; in Mississippi on improved equipment for the application of insecticides and herbicides on such humid region crops as cotton, soybeans, and sorghum; and in South Carolina on the application of pesticides on such vegetable crops as beans, cucumbers, squash, cabbage, and on peanuts. Work in Maryland on airplane application of pesticides to forests would be expanded, in cooperation with the Forest Service, as would also the work in Oregon on airplane and ground application of pesticides to peas and other low-growing crops. Basic equipment studies at the Pest and Plant Disease Control Machinery Research Laboratory at Toledo, Ohio would be strengthened.

(b) Increase of \$104,000 to expand engineering research on harvesting and handling of new crops.

Need for Increase: If new crops are to make an effective contribution to our agricultural economy, it will be necessary to expand engineering research on equipment and mechanized methods for their harvesting and handling. Currently, research by plant scientists on castor beans, sesame, and bamboo has progressed to the point where engineering research should be expanded or initiated.

The United States uses about 40 percent of the world production of castor oil, while producing less than 5 percent of its annual industrial requirement. Breeding has progressed to the point where

sufficient seed of improved varieties for some increase in acreage is available. Growers and processors, as well as research workers, believe that with these improved varieties castor beans could be grown as a commercial crop at present market prices if a satisfactory efficient harvester were available.

Present stripper type machines have a very low field harvesting efficiency. Harvesting losses are too great for these machines to be used economically in commercial production. During World War II stripper type machines were used to a limited extent but castor beans were primarily harvested by hand. In recent years some work has been conducted on the development of a complete combine-type harvester for both harvesting and hulling the beans. Speeding up work on harvesting of castor beans is needed to keep pace with advances in agronomic research.

The breeding work on sesame has likewise progressed to a point where there is serious need for engineering research on harvesting equipment and methods. Such research should be carried on first on a laboratory basis in cooperation with the plant breeders who are developing new varieties and later carried to the field for full scale experiments.

Bamboo has great promise as a fiber crop for paper and for many other uses as a material of construction. Plant scientists believe that agronomically it is suited to large areas of the Southeast. If this potential new crop is to fit into American economy it will be necessary to mechanize its harvesting, field handling, and farm preparation. Agronomic research on this crop has progressed to the point where mature plantings large enough for the initial research on mechanization are available. Large plantings which will be adequate for full scale research have recently been made.

Plan of Work: As agronomic and utilization research studies select, test, improve, and evaluate new crops with potentialities for commercial production, engineering studies would be undertaken to develop and improve equipment needed for their production, harvesting, and handling. When the equipment needs for one crop would be met, the funds would become available to develop equipment for another new crop. Initially it is proposed to use the increase to meet equipment needs for the following three crops:

Research to improve castor bean harvesting equipment would be conducted at Stillwater, Oklahoma, and Shafter, California. Work at Stillwater would emphasize the needs of the southern area of production. At Shafter the needs of the Pacific Coast where larger and higher yielding varieties are grown would be emphasized.

Research on development of new and improved equipment for harvesting sesame would be initiated at College Station, Texas in cooperation with the State agricultural experiment station. Specific problems to be investigated would be shattering losses, efficiency of threshing, and prevention of cracking of seed.

Studies on the mechanization of the harvesting and handling of bamboo, including treatment such as chipping or crushing needed as preparation for shipping to processing plant, would be initiated. This research would be undertaken at Savannah, Georgia, where research work on bamboo is now under way. Later it would probably be extended to South Carolina where large acreages of experimental plantings are currently being made.

(5) Increase of \$835,000 under the activity "Production Economics Research" composed of:

(a) Increase of \$731,000 to provide needed economic data for development and appraisal of farm programs, and research on financial condition, land ownership, and tax burden on different groups of farmers.

Need for Increase: A major problem facing agriculture today is that of adjusting production to prospective markets. Achievement of economic balance in agriculture is a continuing problem because of variations in market demands, changing technology, and other factors, but it is likely to be especially difficult in the next 5 to 10 years. Some land and other resources now used in overexpanded lines of production must be shifted to other lines or be less fully employed. Careful appraisal of the nature of these adjustments is necessary.

The Federal Government is spending large sums of money annually for farm programs designed to bring production in balance with demand, to support commodity prices, to conserve soil and water resources, and to enhance the economic well-being of farmers and the welfare of the general public. Practical economic studies are urgently needed for the development and improvement of farm programs. Their development requires expanded and continuing economic analyses of opportunities for shifting from surplus crops to other farm enterprises, and analyses of the effects that shifts to other enterprises and practices have on production, costs, incomes, size of farm, credit and desirable land use, for each of the significantly different farm situations and type-of-farming areas.

Farm programs have to be modified frequently to meet changing conditions. Estimates of the effects of established programs, as well as the development of new programs, such as the soil-bank program, require continuous current information on costs involved and on income alternatives in each significantly different farm situation. Such estimates now have to be made without adequate information, yet moderate errors in these evaluations can result either in such a low level of participation as to nullify many of the potential benefits of the program, or in costs to the Federal Government many times greater than the cost of research needed to provide adequate economic guidance.

Research is also needed to appraise the significance of changes that are occurring in land ownership, the land market, the financial condition of farm operators, and the tax burden of farmers. Increases in the average size of farms, the greater investment required for machinery and other facilities, and the high level of land values have greatly expanded the capital requirements for purchase and operation

of family farms. This in turn has increased the demand for credit needed for the purchase and expansion of farms. It has limited the opportunities of prospective operators to become established in farming; induced many operators to seek nonfarm employment; and together with lower incomes, reduced the ability of farmers to compete with nonfarm interests in purchasing real estate.

Higher investment requirements have been accompanied by substantial increases in farm debts and heavier property taxes. Between 1950 and 1955 farm debts increased about 44 percent and farm real estate taxes increased about 30 percent. Higher land costs in the form of debt and taxes are becoming embedded as fixed charges in the farm cost structure, and have reduced the ability of farmers to withstand income fluctuations. These changes are adversely affecting the financial security of farmers, the adequacy of existing credit arrangements, opportunities for family farm ownership and operation, and the stability of land prices.

Plan of Work: In order to provide needed economic data for development and appraisal of farm programs, a series of continuing studies in each of about 35 generalized type-of-farming areas would be established and maintained. The studies would be organized: (1) to develop and maintain for significantly different farm situations in each area, current information on farming systems, farming practices, tenure, production, costs, income, and investments, and year-by-year changes which farmers are making as a result of government programs and other conditions; (2) to evaluate the adaptability and effectiveness of alternative programs and measures in each area and farm situation; and (3) to analyze and measure the combined regional and national effectiveness in achieving production adjustment, conservation and other program objectives. These studies would be made in cooperation with the land-grant colleges. They would be planned in consultation with Department action agencies and also various credit agencies. In addition to providing guidance for evaluating farm programs, a greatly improved research basis would be available for the Farm and Home Development Program and other extension programs. They would help individual farmers improve their management decisions in adjusting their farming operations to changing cost-price conditions and changing production techniques.

The research on financial condition of farm operators, land ownership, and tax burden would be conducted in cooperation with the land-grant colleges. A nationwide survey would be made to provide information on the distribution of farm debt and other data on the financial status of farmers, the current status of farmland ownership, and factors entering into the determination of land values. Studies would be made in selected geographic areas representative of the financial condition and ownership status of farmers throughout the nation. Enumerative surveys would be organized to determine: (1) the distribution of farm indebtedness and tax load among different groups of farmers; (2) the extent of need for programs to relieve current and emerging distress situations; (3) the adequacy of credit facilities available to farmers; and (4) the effect of the increase in land values and real estate taxes on farmers in urban fringe areas. Information of this character would indicate areas of potential distress, thus providing Federal and other

credit agencies with information for developing more effective credit programs to meet these particular problems.

In addition, a survey of rural land owners in these selected geographic areas would be made to obtain data on amount, nature, and location of land owned by type and characteristics of owners, including individuals, corporations, and governmental units; data on reasons for acquiring, holding, and disposing of land, including such items as farm enlargement, tax advantages, and anticipation of retirement; data on methods of acquiring land; information on competition of nonfarm investors for farm land and problems faced by young people attempting to get started in farming. Information would also be sought on factors determining the value of farm land, such as technological changes, the long-term earning capability of land, availability of land mortgage credit, interest rates, and amount of land taxes.

Arrangements would be made to provide better current information on the financial condition of farmers and on land ownership, land values, and taxes. Special attention would be given to analyzing specific problems developing in the financial position of farmers and in the land ownership situations in different areas.

(b) Increase of \$104,000 for economic studies of irrigation in the Upper Colorado River Basin.

Need for Increase: The agricultural economy of the Upper Colorado River Basin, as well as its whole economy, is undergoing rapid changes. Even greater changes will occur in the next two or three decades. These changes will result from development of the Upper Colorado River Storage Project which was recently authorized by Congress; by the discovery and development of petroleum, uranium, and other mineral resources, by the rapidly expanding tourist and recreational industry; and many other factors. Of all these forces, the Upper Colorado River Storage Project will have the most direct impact on agriculture. Preliminary project plans call for provision of irrigation water to 130,000 acres of new land and supplemental water to 250,000 acres of land now irrigated with inadequate water supplies. Furthermore, hydro-electric power supplies will be greatly expanded, which in turn will have a significant impact directly on agriculture and indirectly through the expanding urban and industrial economy. The "growing pains" of an expanding economy inevitably will accompany these changes. Research is needed now and will be needed in the years ahead to provide information that will help guide the development of the irrigated agricultural economy of the region.

Far-reaching changes in the present agricultural patterns and practices are in prospect with new lands being brought under irrigation, increased water supplies becoming available for significant areas of land now irrigated, electric power becoming available in more areas and in greater quantities, increasing urbanization and industrialization, and increasing pressures on all land resources. New settlers will be coming into the Upper Colorado River Basin to develop new irrigated farms and to take over old farms that will be changed drastically by the new conditions.

They will be uncertain about the best size and type of farm to establish, about crops that are best adapted to the soil and climate of the region, about crop rotations that will produce highest returns and at the same time will conserve soil resources, and about the combinations of crop and livestock enterprises that will produce the highest returns in the developing market situation that will be encountered. Even with the Upper Colorado River Storage Project, water will be scarce and in all cases water likely will be expensive. Cropping patterns and crop-management practices that are most profitable for the Upper Colorado River Basin may be quite different from those proved to be most successful in other irrigated regions of the West. Many farmers in the region now engaged in an extensive type of irrigation farming will be confronted with the problem of adjusting to higher-valued crops and more intensive practices.

How can present farms adjust to meet these changing conditions? What sizes and types of farms are most appropriate for the new areas? What methods and rates of development would be most economical for these farms? What combinations of crops, cropping practices, and livestock enterprises will be most profitable in this developing economy? What capital investment will be required to make these new developments and changes in present farming, and what guides can be given to credit institutions that will help keep the expanding agricultural economy on firm financial footings? What are the land-use guides that need to be considered in the early stages of this development to assure most effective long-term development? These and many other questions need to be answered as the regional economy expands.

Plan of Work: A series of studies will be initiated in Colorado, New Mexico, Utah, and Wyoming, designed to:

1. determine the most economic sizes and types of farms for new irrigated land in different areas of the Upper Colorado River Basin under the varied conditions of soils, climate, altitude, and other factors affecting crop and livestock production;
2. analyze adjustments needed on present irrigated farms to meet conditions required by the provision of new supplies of irrigation water and to meet the changing conditions with respect to water costs, changing markets for products, higher land values, and other factors;
3. evaluate alternative methods of irrigation land development and appraise factors affecting the most economic rate of development;
4. determine the amount of capital required to develop new irrigated farms of different sizes and types and adjust older irrigated farms to meet the new economic conditions;
5. explore credit needs and facilities with respect to the changing structure of the irrigated agricultural economy;
6. evaluate the costs and returns from different methods of irrigation water application, salinity control, and reclamation of saline lands;

7. explore the impact of new irrigation development on the present economy of the area, especially with respect to the impact on water rights and established irrigation districts and systems.

Special effort would be made through economic research on proposed development farms and by other means to find the most efficient production methods and to test out the income possibilities of the most promising farming systems.

(6) A net increase of \$325,000 under the activity "Animal and Poultry Husbandry" composed of:

- (a) An increase of \$155,000 for the development of improved types of sheep on farms.

Need for Increase: Sheep numbers have fallen to new lows in recent years and the current need for a revitalization of the industry is urgent. This is particularly the case in view of the recently established policy of industry and Department sponsored incentive payments for the support and improvement of lamb and wool production.

Farm sheep raising is one of the most promising of current farm livestock enterprises from the standpoint of monetary returns on relatively small investments in stock, equipment, and feed on those farms which have continued to retain efficient flocks and the "know how" of effective sheep production over the years. Lamb meat is in short supply and domestic wool production by no means approaches the Nation's requirements. Both provide a ready source of farm income.

The development of more productive and more efficient types and strains of farm sheep--a relatively neglected area of livestock research in recent years--is a fundamental need of the industry at this time to enable more efficient and profitable production in the farm areas of the country. It would provide an effective means of utilizing profitably some of the land which is now producing surplus crops and of contributing materially and directly to the purposes and goals of the current Soil Bank and conservation programs.

Basically, changing conditions in the highly competitive wool situation and the need to increase the quality of wool produced in terms of strength, length of fiber, and uniformity, together with the need to emphasize lamb meat production, make it imperative that improvements be worked out on methods of breeding and selecting farm sheep that meet current requirements. Fertility and lactation capacity especially need attention to bolster more effective and economical production. Improvement in meat producing ability needs to be emphasized with respect to increased yields of the preferred commercial cuts of lamb meat, particularly the increased production of tender lean meat. Relationships and interactions between breeding and environmental factors, about which little is known, need to be studied in order to facilitate the efficient production of high quality meat and wool under the diverse environmental and nutritional conditions prevalent in the farm sheep regions from North to South. Efficiency of

production of both lamb and wool is affected by seasonal and climatic factors, as well as by genetic and nutritional factors, and the relationships between these effects must be determined to obtain most profitable production, especially of meat. Expanded research is needed to achieve these objectives.

Plan of Work: It is proposed to expand the small beginning which has been made in this type of research by the establishment of experimental flocks specifically devoted to the problem at State agricultural experiment stations in Ohio, South Carolina, and Virginia. Substantial flocks of experimental sheep are available at these locations, but would need to be increased somewhat, both through natural development and the purchase of additional lines of breeding, to provide sufficient numbers for experimental results. Some work would also be conducted at the Beltsville station.

(b) An increase of \$145,000 to provide urgently needed buildings and facilities at the U. S. Range Livestock Experiment Station, Miles City, Montana.

Need for Increase: The U. S. Range Livestock Experiment Station at Miles City, Montana, is one of the oldest of the Agricultural Research Service field stations. It is devoted to basic breeding, feeding, and management studies with range cattle and has been the source of many important research results being applied by the industry today.

The beef cattle research program is based on a herd of nearly 800 cows and 2-year old heifers. Experimental lots of cattle are increasing both from expanding breeding projects and new work in physiology, nutrition, and management. These additional lots require more shed space for research and for general protection of animals. An additional cattle feeding shed is urgently needed for this work. It must be of sufficient size to accommodate both individual and small group feeding of experimental cattle, as well as have facilities for holding and working up supplies of experimental rations.

In addition, construction of an adequate station sewage disposal plant is urgently needed. Under the present situation the raw sewage of the station is emptied directly into the Yellowstone River not far upstream from the city of Miles City. It is only a question of a very short time before this practice will be prohibited by the city authorities and the location of the station thus rendered untenable. The plant would process and dispose of all raw sewage on the station.

This station was a former military post established during the frontier Indian Wars and many of the post headquarters facilities and buildings, although obsolete and impossible to keep in adequate repair, are still in use. The residences, for example, date back to the founding of the post in the 1870's. They are far beyond sensible or economical upkeep, repair, and effective heating in that rigorous climate and should be razed and replaced in the best interests of the

Government as rapidly as needed replacements can be provided. The replacement of the first of eight such residences that are urgently needed is proposed at this time.

Plan of Work: Construction recommended would be as follows:

Cattle feeding shed (\$25,000). A wooden shed approximately 30 x 100 feet is planned, open to the south, with adequate yarding, necessary feeding alleys, troughs, hay racks, and provision for overhead storage of baled hay. A two-story head house, approximately 40 x 40 feet, would complete the structure. It would provide space for concentrate storage and grinding and preparation of feed.

Sewage disposal plant (\$100,000). This plant would be of masonry construction. It would contain the necessary processing machinery, equipment and supplementary facilities. It would be necessary to plan the plant on the ground under the guidance of a sanitary engineer.

Residence (\$20,000). Standard plans for the construction of a six-room brick residence would be followed.

(c) An increase of \$250,000 to provide headquarters laboratory buildings, including lambing and feeding quarters, at the U. S. Sheep Experiment Station, Dubois, Idaho.

Need for Increase: The vital and highly technical sheep research program being conducted at the U. S. Range Sheep Experiment Station at Dubois, Idaho, has outgrown its present quarters through broadening of the experimental program, material increase in numbers of experimental animals required for research, as well as the necessary increase in the size of the staff required to conduct such research effectively. Additional facilities, consisting of laboratory and office space and lambing and feeding quarters, are urgently needed at this time.

An experimental flock of approximately 2600 ewes, plus extensive numbers of rams and necessary replacement ewes, is maintained at Dubois, together with the large annual lamb crop. Individual records, which are essential to the research program, must be kept on all these sheep. Fireproof record rooms with space for punch card calculating equipment and statistical work are urgently needed. All irreplaceable basic records, including those of former years, are retained at the station, hence the need for extreme care in their safeguarding. Additional office accommodations and working laboratories are required for technical and statistical personnel and conference space for groups of approximately 50 people meeting there at station field days and technical conferences.

Expanded quarters are needed for ewes during the lambing season to permit the proper care of valuable experimental breeding stock, both ewes and lambs, including the meticulous maintenance of individual

identities required by research procedures. Provision of such additional lambing quarters should materially reduce the death losses at lambing time occasioned by the present overcrowded conditions. Quarters are also badly needed for performance and related growth and feeding tests, both to measure breeding progress and to undertake new studies on nutritional and physiological problems of the Intermountain area.

Plan of Work: Construction would be as follows:

Headquarters laboratory (\$200,000). The building would be approximately 48 x 60 feet in size, of cinder block and stucco construction, with two full floors and basement. Two large fireproof record storage and statistical equipment rooms would occupy about half of the basement of the new building with heating and service rooms taking up the remainder of the space. The first floor would be devoted to working laboratories and individual office space. The second floor is planned as a large single room which would serve as a conference room and place for general meetings of cooperating State workers and others.

Lambing shed (\$25,000). This building would be of frame construction, about 60 x 100 feet in size, with built-in holding and individual lambing pens and a 12-foot center alley for servicing. The building would be built from standard plans and would be patterned closely after the larger lambing sheds already in service there. Built-in equipment, such as hay racks and feed troughs, would be provided.

Feeding shed (\$25,000). This building also would be of frame construction, about 60 x 100 feet in size with side and center alleyways and 4 rows of 25 built-in pens for individual feeding. The building would have a two-story head house, approximately 25 x 60 feet, for storage and preparation of feed. This building also would be constructed from standard plans. Necessary built-in equipment would be provided.

(d) A decrease of \$225,000 due to the elimination of a nonrecurring amount provided in the 1957 appropriation for the construction of a modern centralized poultry brooder house at Beltsville, Md.

(7) An increase of \$154,000 under the activity "Dairy Husbandry Research" for research to expand and improve the dairy herd improvement and sire-proving programs.

Need for Increase: One of the greatest needs of the dairy farmer today is to reduce the costs of milk production and to improve efficiency. Enrollment of his herd in the Dairy Herd Improvement Association (DHIA) will provide the basic information he needs to accomplish this. DHIA record keeping provides the farmer with information that enables him to cull the unprofitable cows, feed the remaining ones according to producing ability, and select the best animals for breeding replacements. In order to accomplish this objective the National Cooperative DHIA Program has developed a plan of record keeping in addition to the two already in use, thus broadening this service to dairymen. The new plan is simple, low in cost, and especially suited to the small family-size dairy farmer. It is anticipated that over the next few years 40 to 50 percent of the dairy cows could be enrolled in one of the three plans of record keeping, compared to the present 7 percent.

The Department's responsibility in the National Cooperative DHIA and Sire-Proving Programs is to coordinate, supervise, and provide uniformity in methods and procedures; to summarize, analyze, and report results and make them available to the industry; and to conduct research studies on various phases of the program. Increased funds are needed to modernize present record keeping, to improve methods of evaluating production records used in sire proving, and to make such information available to the industry. The new record keeping plan will involve large amounts of printed supplies and materials in order to maintain and disseminate the information.

Recording the performance of cows in DHIA is a key to reducing costs and improving net income from dairying. In 1955 the average production of cows in the National Cooperative DHIA program was 9,500 pounds of milk. This is 63.3 percent greater than the 5,815-pound average for all cows kept for dairy purposes. Participation in DHIA encourages farmers to adopt new practices developed from research more rapidly than non-participants. DHIA studies show that a 7,000-pound cow returned \$67 more, a 9,000-pound cow \$97 more, and an 11,000-pound cow \$136 more over feed costs than a 5,000-pound cow. Even though high producing cows take more feed for maintenance and production than low-producing cows, the income over feed costs increases as the level of production increases.

One important phase of the DHIA program is sire proving. The records of the production of individual cows in herds of participating farmers are used to determine the transmitting ability of sires. This program locates and identifies the superior transmitting dairy sires in the country. This activity is of great importance in selecting sires for use in increasing the producing ability of the nation's dairy cattle. The search for, and use of, superior production-proved sires is soundly conceived and based on research demonstrating the value of this method of improving the producing ability of dairy cattle. It is widely practiced in the industry, especially through artificial breeding which now is serving over $5\frac{1}{2}$ million dairy cattle. More than one-third of the sires in the studs are production-proved sires, and the search for additional meritoriously-proved sires is intense. The problem of obtaining more reliable proofs on sires is acute because of the many environmental factors that affect production records of cows. Additional research is needed to develop more accurate methods to evaluate these records and improve sire provings.

Since 1947 the number of cows enrolled in the DHIA program has increased by 81 percent and the number of individual cow production records received for use in sire proving has increased by 154 percent. Electronic calculating equipment has been used to the fullest extent in processing the records. Even so, it has not been possible to keep the analytical work on a current basis. The number of employees available for this work has steadily decreased in recent years, due to increased operating costs. Currently, plans are being made to adapt the program to newly-developed, high speed, magnetic tape, electronic data processing equipment. This change would not reduce the overall cost of operating the program but would permit a more complete job of analysis of the data. It would not permit savings which would meet the needs in fiscal year 1958 of this expanding program. Therefore, the proposed increase is urgently needed.

Plan of Work: Record-keeping procedures would be modernized in order to bring the sire-proving program to a current basis. It is expected that the actual changes in procedures would be effected by January 1, 1958. The coordination, supervision, and furnishing of materials and supplies for promotion of the new testing plan also would be undertaken. As the development of the new record-handling procedures is accomplished and the record-keeping on farms is expanded, it would be possible to conduct needed research studies on various phases of the program, including the development of methods for increasing the reliability of evaluating production records used for sire provings. Such studies would be undertaken in cooperation with the Maryland, Virginia, Pennsylvania, North Carolina, Illinois, and New York agricultural experiment stations.

(8) An increase of \$308,000 under the activity "Animal Disease and Parasite Research" to strengthen research on animal parasites.

Need for Increase: The January 1955 issue of "Livestock Conservation News", estimates the annual losses from livestock parasites as \$906,800,000. Losses under this estimate were based on reduced yield and depreciation of animal products; condemnation of parts and entire carcasses under meat inspection; waste of feed, labor, and space; reduced quality of animals; interference with breeding and reproduction; inefficient utilization of pastures; and lowered resistance to bacterial, viral, and other diseases.

Internal parasites are widespread in practically all parts of the country and are spreading in all directions, due in part to the extension of irrigated pastures in areas where in former years livestock was raised almost exclusively on the range. With the improvement of pastures generally throughout the country and the increased use of irrigated pastures in the West, parasitism looms up as a continuously increasing threat to livestock production, unless methods are developed for circumventing it. Since animals graze in the same areas onto which they discharge their droppings, the spread of livestock parasites will go on uninterruptedly and will increase in intensity as livestock production is increased, unless means are developed through research for preventing parasitic infestations or expelling parasites from livestock once they have surmounted the barriers which have been erected against them.

To reduce or prevent losses from parasites, research should be initiated or expanded at this time on the following specific problems:

Liver flukes. The four known species of liver flukes in this country cause an annual loss of \$4,600,000 in sheep and \$3,500,000 in cattle, exclusive of the cost of veterinary services and drugs for treatment. Liver fluke infestations make for inefficient livestock production. They are frequently fatal, more often in sheep than in cattle. In both classes of livestock, they cause large losses through unthriftiness, uneconomic utilization of feed, poor carcass quality, and condemnations of livers at slaughter houses under Federal inspection. New and better methods of control are needed, especially for the lancet fluke which has only recently gained entry into this country and for which current control measures are ineffective.

Mange or scabies in cattle. Four kinds of scabies or mange cause an estimated loss of \$4,500,000 to the cattle industry. This estimate was made by the Department prior to the 1954 outbreak of common psoroptic scab in six western States which necessitated official inspection of over one million head of cattle and individual treatments of 28,781 infected or exposed cattle. Increasing incidence of scabies necessitates expansion of research for better control measures.

Scabies causes reduced gain and market value, loss and depreciation in meat and hides, and occasional deaths when infested animals are exposed to unfavorable weather conditions. It also reduces milk production and is a constant economic hazard to the dairy industry. Moreover, it interferes greatly with the sale, shipment, and stockyard handling of cattle.

Exotic parasites and parasitic diseases. Research on exotic protozoan parasites and parasitic diseases is urgently needed. In some cases, mortality among affected animals in the countries where they exist amounts to 90 or even 100 percent. In the past, quarantine and other measures have been successful in keeping out of this country devastating foreign parasitic diseases, such as trypanosomiasis, piroplasmosis, East Coast fever, and theileriosis. It is by no means certain how long those measures will be successful because other parasites and diseases have surmounted the barriers and have appeared in this country. For example, scrapie and bluetongue, diseases of foreign sheep, have recently gained entrance into the United States and constitute serious economic problems. There is reason to believe that scrapie was first introduced into Canada and then into the United States through importation of sheep harboring the disease in latent form.

Possible vectors for many exotic parasites to which our livestock would be highly susceptible, exist in this hemisphere. Because of this there is no guarantee that foreign parasitic diseases of livestock may not at any moment show up in this country and spread rapidly throughout the animal population. Were any of these diseases to effect entry into the United States the impact on the livestock industry would be devastating, because organized means of combating them do not now exist.

Publication and maintenance of bibliographic references to parasites and parasitic diseases of livestock. Although bibliographic work on parasites and parasitic diseases (the Index Catalogue of Medical and Veterinary Zoology) has been maintained for many years, the dissemination of this information has been inadequate considering the importance of the work and the useful purpose it could serve, not only in connection with animal diseases but also nematodes of plants and even parasites of man. It has served, and is now serving, as a major working tool of Department and other local research workers in livestock parasitology. It has been estimated that the catalogue saves about one-fourth of the time of the research worker.

Aside from its use as a working tool, it is an indispensable reference for spotting immediately the distribution of exotic parasites dangerous to our livestock the world over. Parasitologists in the Department of Defense and in The National Institutes of Health have utilized over and over again these references as a source of material upon which to undertake their programs, such as reducing hazards to troops from exotic parasites, etc.

The major part of the catalogue, about 2 million references, is not available to workers, except in the local area. Since the coverage of this catalogue is world-wide, much good would be served by having it published and made available to investigators. Although it has been possible to keep the author section of the catalogue on a current publication basis, the subject section has not been published for nearly 50 years. Other parts of the catalogue on which nothing has been published constitute (a) the host catalogue, which lists by host animal the parasites reported therefrom and contains references to the literature; and (b) the treatment catalogue which consists of references to the literature on treatments tested or advocated for the amelioration or cure of parasitic conditions. The latter section is different from all others because, in addition to citing references, an abstract of each article is included. Publication of these parts would reduce the risk of loss of the present investment by fire.

Plan of Work: The increase would be used as follows:

Liver flukes. Research would be undertaken to find new drug treatments, since medicinal treatments probably offer the best hope for control of fluke. Studies of the life history of flukes as larvae on pastures and of their intermediate hosts would be made and work initiated to develop more efficient snail poisons since the destruction of snails, as intermediate host, is an important means of fluke control. Work would be conducted at Beltsville and in cooperation with the New York and Oregon State agricultural experiment stations.

Mange or scabies in cattle. Studies would be made of the comparative advantages and efficiency of dipping, spraying, and spray-dipping; comparative safety of emulsions and suspensions; possible advantages of employing detergents and spreaders in effective formulations; rate of dipping fluids and of removal of active ingredient by successive dippings; new chemicals which might emerge from screening techniques; the systemic approach to treatment; and certain basic aspects in the pathobiology of the disease, including those designed to simplify and improve differential diagnosis and ready recognition of the troublesome incipient, quiescent, and carrier cases. Studies would also include methods for area eradication of scabies. Work would be carried out in New Mexico, New York, Illinois, and at Beltsville, Maryland.

Exotic parasites and parasitic diseases. The initial research would be directed largely toward developing knowledge of the identification, diagnosis, serology, and immunology of the different parasites as a basis for their prompt recognition, including methods of immunizing animals against them; study of factors that underlie and govern spread of flukes where they are endemic; identification of vectors and determinations of the life cycles of the parasites in them; methods by which the parasites are transmitted and methods of vector control; clinical aspects of the diseases; the pathologic manifestations of infection, and other factors basic to the problem of coping with the diseases in a susceptible animal population. Work would be conducted at Nairobi, Kenya Colony, and at the Gorgas Memorial Institute in Panama or possibly in Venezuela, Columbia, or Brazil.

Publication and maintenance of bibliographic references to parasites and parasitic diseases of livestock. Bibliographical material not now published would be edited and put in manuscript form for publication. It would take at least 5 years and possibly more to complete publication of the backlog of material now available. Once published, the material would be kept up to date by annual supplements.

(9) An increase of \$200,000 under the activity "Human Nutrition Research" to expand research on urgent problems of fat in human nutrition.

Need for Increase: Food uses are major determinants of market demands for fats and oils. In view of the surpluses of these products and the growing demand for information on problems of fat in human nutrition, further research on the physiological effects of different kinds and amounts of fat, and on their chemical nature and metabolic behavior is needed to help point the way to desirable shifts in production, processing, and consumption of foods containing fats and oils.

Figures on national consumption indicate that the per capita use of fat has increased over the years. The food coming into kitchens brought a larger quantity of fat (16 percent more) in 1955 than in 1910-14, and fat now provides a larger proportion of the calories than 40 years ago (41 percent as compared to 32 percent, or nearly a third more of the calories). This change reflects increased use of meat, poultry, and eggs, as well as increased use of vegetable fats and oils bought as such or existing in processed foods. The demand for convenient food items for home and restaurant use is rapidly multiplying the number and kinds of foods processed in fats.

Public health studies of world-wide incidence of coronary disease in relation to the nature and quantity of fats consumed, and clinical studies of the relation of diet to cholesterol and lipoprotein levels of the blood raise many questions of concern to agriculture. Research is needed to determine whether normal diets should include (1) less of all kinds of fats and oils, or (2) less of some kinds of fats, or (3) more of other kinds of fats and oils. The desirable range in quantity and kinds of fatty acids may also be related to other dietary constituents--the kinds and amounts of proteins, essential amino acids, vitamins, and carbohydrates. The scientific literature puts forward many bits and pieces of knowledge but the gaps still are such that it is impossible to make a satisfactory statement of the role of fat in nutritional health.

The economic significance of the problem is measured in part by the burden of agricultural fat surpluses, in part by the losses borne by consumers for market trimmings and kitchen and plate discard of unwanted fat, and in part by the premature loss of manpower that now is being attributed to dietetic errors associated with the kinds of fat consumed. Delaying the needed research will prolong the period of uncertainty and increase the chances for unsound or biased interpretations of scraps of evidence from piecemeal, uncoordinated studies. Much more research evidence is needed in order that the Department may recommend with confidence how producers and processors may provide products better adapted to health needs and how consumers may, by being discriminating in their food choices, improve the dietary relationship among foods and nutrients in the interest of better health.

Plan of Work: Research would be initiated to investigate the role of fat in human nutrition, including (a) the relationship of the amount and kinds of fat to metabolism of other nutrients, (b) determination of desirable kinds and the upper and lower limits of dietary fats in various nutritional situations, and (c) the dietary precautions needed with respect to other nutrients when fat in diets is unusually high or low. The purpose of the studies would be to determine the requirements of fat for maintenance of health of normal individuals as distinguished from clinical cases requiring medical attention for dietary causes.

Current studies on the effects of kind and amount of fats and proteins in the diet on early physical impairment of adult rats of different strains and dietary background would be expanded, using a wider range of fats and proteins and employing a variety of appropriate techniques to determine the factors responsible and the nature and primary sites of tissue damage.

Metabolic studies with human subjects would be started as soon as contract could be negotiated and executed, since the reference diet to be used has already been developed and pretested in different situations. Research institutions having adequate housing and laboratory facilities and experienced staff for conducting such work include Alabama, California, Minnesota, and Nebraska. One or two contracts with one of these States would be undertaken each year. The research would be closely coordinated with that of other agencies having related interests in the problems of fats in relation to nutritional health.

(10) Increase of \$53,000 under the activity "Clothing and Housing Research" to expand research on serviceability and maintenance of clothing fabrics.

Need for Increase: A highly competitive industry is putting on the market a constantly changing array of new fabrics and special purpose finishes for textile products. Little is known of the serviceability of these new fibers or fabrics or of the construction features that are required for their satisfactory performance. Methods of care are, in many instances, far different from traditional procedures. Information is urgently needed to help consumers evaluate, use, and care for cotton, wool and other textile products in such a way that they will be satisfied customers.

In 1955, consumer expenditures for the purchase and maintenance of clothing, exclusive of shoes, amounted to more than 19.5 billion dollars. In addition, considerable household reconditioning was undertaken, the results of which were only in part satisfactory.

Information is urgently needed on:

(1) Improved procedures and methods for measuring and predicting the performance consumers can expect from clothing purchases, under actual conditions of wear and reconditioning. Some of the procedures and methods developed would also be useful for product control in manufacturing operations as well as for use in contract specifications for clothing purchases.

(2) Wearing qualities--laundryability, stability, durability, and comfort--of new cotton, wool, and blended fabrics in important articles of clothing. Such information would encourage manufacturers to provide more helpful labeling for purchasers in the retail market. It is now practically impossible for consumers to evaluate by inspection many of the goods now on the market.

(3) Temperatures best suited for ironing the newer fabrics--those containing modified cotton or wool, or treated to impart special properties. Results would indicate to appliance manufacturers the performance required of steam and dry hand irons, and the proper labeling of temperature controls on their products.

Plan of Work: Controlled studies would be undertaken to establish the basic relationships between laboratory and in-use results in order to predict the performance consumers can expect from clothing purchases. Knit and woven fabrics would be studied with emphasis on effects of modern treatments of cotton and wool and of use of blends with other fibers on the properties of fabrics. These would include the effect of different types of clothing construction, care, and maintenance on serviceability and comfort of garments. Research would be conducted at Beltsville, Maryland and also in cooperation with State agricultural experiment stations or other research institutions. It would be coordinated with and complement regional cooperative projects being conducted in the North Central and Northeastern States on the consumption, characteristics, and serviceability of clothing now on the market.

(11) Increase of \$770,000 under the utilization research activity "Cereal and Forage Crops" to expand research on wheat, other small grains, and corn to provide information needed to encourage increased use in industrial products and feeds.

Need for Increase: Wheat, other small grains, and corn are of primary importance to American agriculture. An expanded program of utilization research on cereal grains is urgently needed to provide the scientific basis to enable either the channeling of grain products into new uses, or enhancement of their value to allow substantial increase in present uses. The best opportunities for obtaining significant results lie in directing research toward increased usage of grains in expanding industries requiring large quantities of raw materials, and toward upgrading the feed value of grains through fermentation.

Wheat: Expanded research on utilization of wheat is urgently needed because of continued decline in per capita consumption. It should be directed mainly to gluten, its principal protein, and starch. These are the most important of the presently known constituents of wheat. Expanded research is required on the development of new uses for gluten, either as such or after chemical modification, which would utilize the unique properties of this protein in such fields as adhesives and coatings. For wheat starch, potential large-scale outlets exist in the paper, textile, and plastics industries, as well as in other applications. The incorporation of larger amounts of starch in paper, for example, as an

improved sizing or coating, would increase the use of starch in the nation's large and expanding paper industry. Expansion of the present program of starch modification is required to hasten achievement of this goal.

Another potential outlet for large quantities of wheat is through the production of high quality protein supplements. Work should be expanded on the fermentation of wheat to microbial protein concentrates having high content of important nutrients, such as essential amino acids. Such concentrates are needed for feeding livestock. Studies also should be initiated to determine the potentialities of the use of wheat or wheat products in large-volume industrial applications such as integral components and binding agents in pulp and fiber-based panel products or related compositions. Because of the key position of flour in present and future utilization of wheat, work should be initiated on the effect of tempering conditions on the milling efficiency and on the quality of flour produced.

Corn: Increased industrial and improved feed utilization of corn is needed in order to make corn of more value as a cash crop and to utilize larger amounts of corn. The major constituent of corn, as well as other cereal grains, is starch. Corn is now our most economical source of starch. In its present uses--for example, in textile and paper applications--corn starch and products derived therefrom are encountering serious competition from imported vegetable gums and from synthetic compounds.

Research is needed to develop products of improved properties for applications where starch is being displaced or its expanded use prevented by the lack of adequate properties. Expansion of the present studies on starch modification are essential for the more rapid progress needed. In addition, research should be initiated on the chemical modification of corn sugar and the present program expanded on the microbial synthesis of polysaccharides of potential value as thickening agents, gums, and sizing materials.

New products from starch also must be developed which can enter fields of industrial applications previously closed to starch-derived products. In this category is the initiation of studies of the possibility of producing rubber by fermentation of starch. The importance in this field is shown by the fact that about 600,000 tons of natural rubber are imported annually.

Other Small Grains: Increased production of small grains such as sorghum, barley, and oats has enhanced the significance of these crops in our agriculture. Additional information on their constituents is needed to establish a foundation for better utilization of these grains as feed and to find whether areas exist in which they have natural superiority for quality industrial uses. In addition to expansion of composition studies, experiments on the fermentation of the grains should be expanded to find any possible advantages they may have for conversion to improved livestock feeds containing essential amino acids and growth factors. Investigations should be initiated on the conversion of oats, barley, and

sorghum, to a purified starting material through removal of the fibrous outer layer or hull. The resulting product would be of improved color and homogeneity and would be more suitable for the preparation of flour or the application of chemical, physical, or microbiological treatments and modifications. Potential large-scale outlets are expected in such areas as sizing, adhesives, and paper products.

Plan of Work: The proposed research would be conducted by the Northern Utilization Research Laboratory, Peoria, Illinois. New research would include:

1. Development of new industrial and food uses for wheat, gluten, as such, in both the denatured and vital forms.
2. Research on the potentialities of large-volume industrial use of wheat or its chemically or physically modified forms in applications such as integral components and binding agents in pulp and fiber-based panel products or related compositions.
3. Studies of the effect of wheat tempering conditions on milling efficiency and the quality of flour produced.
4. Research on conversion of cereal starches to rubber through the fermentative action of microorganisms on starch from wheat, corn, and other small grains.
5. Development of methods for the chemical dehulling of oats, sorghum, and barley to produce a refined raw material for conversion to industrially useful products.

In addition, current research would be expanded in the following fields:

1. Chemical modification and production of derivatives of gluten of industrial value.
2. Development of uses for chemically modified (dialdehyde) starches (economic production by periodate oxidation recently developed) through production of new chemical derivatives of potential value in the fields of plastics and coatings.
3. Research on chemical and microbial transformation of corn sugar (dextrose) to new polysaccharides of value in textile and paper applications.
4. Production of high quality protein concentrates by fermenting wheat, corn, and other small grains.
5. Separation and identification of the minor chemical components of the small grains with emphasis on constituents of potential importance in the feed and industrial utilization of the grains or byproducts of their processing.

(12) Increase of \$870,000 under the utilization research activity "Cotton and Other Fibers" composed of:

(a) Increase of \$365,000 to develop new and improved cotton fibers, fabrics, processes, and processing machinery to maintain and increase the markets for cotton.

Need for Increase: For many years the economic position of cotton has become less and less favorable due to losses of large industrial markets, declining exports, increasing carryovers, and expanding consumption of competing fibers and products. Within the past few years the plight of cotton has become acute. Cotton's share of the total domestic fiber market is now down to 66 percent, as compared to 69 percent in 1954, and 81 percent in 1940. Per capita consumption in 1955 was 26.5 pounds as compared to 29.5 pounds in 1940. As a net result, there was a domestic carryover at the beginning of the 1956 crop year of 14 million bales.

This decline in the economic position of American cotton has occurred while both the domestic and foreign consumption of all textile fibers has been steadily increasing. An increasingly large portion of the domestic textile market is being supplied by fibers much higher in price than cotton. Consumers of today are demanding higher quality textile products and products with specialized properties for specific uses.

Utilization research is the primary means of developing cotton products with those properties that will cause them to be purchased in preference to competitive products. Increased research in this field is urgently needed. Utilization research on cotton has never been conducted at a rate commensurate with the value of the crop or with the opportunities afforded for improving the competitive position of cotton. Moreover, funds now being spent on cotton utilization research are negligible in comparison to the amounts being spent on the fibers and products that are steadily displacing cotton from its present markets.

Plan of Work: Present research by the Southern Utilization Research Laboratory, New Orleans, Louisiana, would be expanded to undertake the following types of work:

1. Investigations to acquire fundamental information needed in applied research to develop cotton products of enhanced practical value;
2. Development of more rapid instruments and testing methods for determining the commercially useful physical and chemical properties of cotton;
3. Development of additional relationships between cotton fiber and yarn properties and processing efficiency and product quality;
4. Research on improved and completely new types of mechanical processing machinery and new processing techniques to provide cotton products with more consumer appeal;

5. Research, both fundamental and applied, to transform cotton through chemical finishing and chemical modification into new textile products having enhanced properties for specific end-uses.

(b) Increase of \$400,000 to expand research on utilization of wool and mohair.

Need for Increase: The situation of the wool industry is becoming increasingly precarious. Steadily rising costs of wool and mohair manufacture, coupled with increasing incursions into traditional uses of these fibers by synthetics, has seriously crippled the industry. Since 1949, some 200 wool mills have gone out of business and domestic production of shorn wool has been curtailed from the pre-war average of 365 to less than 230 million pounds (grease basis).

Cheaper and better manufactured wool and mohair products are needed in order to stimulate return of wool production to a higher level, the goal of the National Wool Act of 1954. A higher level of production is important to the Nation's prosperity and security. To assure a domestic supply of wool and mohair for civilian and military needs, which is especially important in time of national emergency, would require millions of acres of grazing land now used to produce surplus crops.

Man-made fibers lack many of the desirable textile characteristics of wool, but they have certain properties that are better than wool which have been stressed in their promotion. Among the weaknesses of wool are its tendency to shrink in laundering and susceptibility to quality damage by bleaches, acids, alkalies, sunlight, and insects. Results of basic laboratory investigations show that such weaknesses can be overcome through chemical modification. There is a tremendous area of possible development of new and improved qualities of wool and mohair through research.

Utilization research on wool fibers is very limited in this country. The decline in financial strength of the wool and mohair industry has resulted in virtual extinction of the research program in mills. Wool research being done at State agricultural experiment stations is mostly on production problems. The Department's research program has had to be confined because of limited funds to basic science studies on composition, fiber characteristics, and modification. Broadening and intensifying the research program on wool and mohair to include pilot plant studies through all stages of worsted fabric manufacture is urgently needed at this time.

Plan of Work: Pilot scale processing research on worsted fabrics under strictly controlled conditions would be initiated. All stages of manufacture, including scouring, carding, combing, drawing, spinning, weaving, and finishing, would be studied. These processing studies would be undertaken by the Western Utilization Research Laboratory, Albany, California, and closely integrated with the existing fundamental studies of chemical modification of wool and mohair.

Studies would include (1) testing and evaluating new treatments of wool under precisely controlled conditions, including wet and chemical finishing; and (2) developing new and more economic processes, and larger scale evaluations of newly developed procedures, finishes, and modifications.

Close cooperation would be maintained with other Department organizations, and with State agricultural experiment stations, who would provide wools and mohair of known background. In considering the requirements of new and modified fabrics for specific end-uses, assistance of textile sections of the National Bureau of Standards and the Office of the Quartermaster General, and associations of industrial processors would be sought.

(c) Increase of \$105,000 to construct a building at the Western Regional Research Laboratory, Albany, California, for processing research on wool.

Need for Increase: A pilot plant building is urgently needed for expanded wool and mohair utilization research at the Western Utilization Research Laboratory. It would make possible substantial improvements in the efficiency of wool and mohair manufacturing operations and evaluation of new and improved wools and mohair through chemical treatments. Such studies are needed to make possible increased returns to growers, lower costs of wool products to consumers, and expansion in market outlets for wool and mohair.

The wool utilization program which was initiated in 1947 is housed in the Western Utilization Research Laboratory. Up to the present time research has been limited to basic investigations mainly concerned with composition, quality evaluation, and chemical modifications of wools. Results of these basic investigations clearly point to the need for intensive processing research, including studies from raw wool through finished fabric. To carry on work of this type, complete processing facilities would be needed. Processing operations would require approximately 12,000 square feet of space which is not now available at the laboratory.

Plan of Work: It is planned to construct a pilot plant building, approximately 100 by 120 feet of pre-formed steel truss work and corrugated sheet metal roofs and sidings, to be built on a concrete floor slab. The interior walls would be insulated and surfaced and heating, electrical, and plumbing services installed. The building would consist of two main areas, one for mechanical processing and one for wet and chemical finishing of fabrics. In addition, a small control laboratory, space for office use and machinery servicing and maintenance, and space for temporary holding and conditioning of wool to be used in the processing studies would be provided. Land is available at the Western Utilization Research Laboratory for this building.

(13) A net decrease of \$604,000 under the utilization research activity, "Fruits and vegetables" composed of:

(a) A decrease of \$785,000 due to elimination of a nonrecurring amount provided in the 1957 appropriation for the construction of a laboratory at Winter Haven, Florida for research on citrus and other fruits and vegetables.

(b) An increase of \$181,000 to strengthen the market for surplus fruits, nuts, and vegetables by development of processed products of improved quality, stability, and convenience, and byproducts of greater value.

Need for Increase: Because of the large fluctuations in the production of various fruit, nut, and vegetable crops due to varying yields and other factors, and because in many cases consumers will readily substitute one fruit or vegetable for another, there frequently are surpluses of these crops. There is great need for strengthening research on them to develop processed products of improved quality, stability, and convenience to stabilize their markets and to increase the returns to growers.

Fruits. Consumption of many fruits, especially dried fruits, has not kept pace with the growth of population. For example, the per capita consumption of raisins has decreased by 20 percent from the pre-1940 level. In the Southeast, peaches are an important crop, but surpluses often cause economic losses. Increasing production of grapefruit, combined with a downward trend in consumer demand has caused prices to decline for the portion of the crop which is processed. Development of better processed products with improved quality, stability, appearance, and convenience would strengthen the markets for these commodities. In many cases, the chief obstacle to improvement of the processed product is insufficient knowledge of the factors involved in changes taking place between harvesting and final stages of processing. Deteriorative reactions, particularly enzymatic changes, take place between harvesting and processing which affect markedly the color, flavor, or texture of the fruits. With frozen fruits, deteriorative changes continue through processing and in the final packaged form.

Nuts. With anticipated increases in the production of nuts, the industry must market a greater proportion as shelled nuts or divert an even greater amount to low-return byproducts. When shelled nut meats are marketed in permeable types of transparent films, they gradually darken and become rancid. Marketing in vacuum-packed cans increases the cost and lack of product visibility has discouraged its widespread use. Research is needed to improve the stability and quality of shelled nuts in marketing channels and thereby strengthen market demand.

Vegetables. In 1954, it is estimated that some 9 million dollars worth of vegetables were surplus and went unharvested. Minor fluctuations in vegetable production cause disproportionate swings in prices. Severe price fluctuations are most pronounced for those commodities which are not processed to stable forms. Flavors and quality of vegetables are easily lost or altered during processing and increased research is needed to improve processing methods which will retain original color, texture, flavor, and nutritive value. Recently, information has been developed that fresh flavors

can be restored in canned and dehydrated vegetables by the addition of certain enzymes isolated from waste portions of the vegetable or sometimes from entirely different species of plants. This opens up a broad new field for quality retention or flavor research which should be exploited.

Plan of Work: Research by the Western Utilization Research Laboratory, and the Southern Utilization Research Laboratory would be expanded to:

1. Strengthen the market for fruits, such as raisins, prunes, peaches, and grapefruit, by improving processing methods so as to improve product quality, stability, and flavor. Basic research would be conducted on enzymatic changes and their effect on quality and uniformity of the processed product.
2. Improve the market for shelled nuts by determining methods and processes to enhance their quality and appearance in packaged form and increase their shelf life.
3. Strengthen the market for vegetables, such as cabbage, sweet corn, peas, and green beans, by finding ways to retain, modify, or enhance natural flavors in processed vegetables by various procedures, including bacteriological alteration by fermentation and enzyme treatment.

(14) Increase of \$260,000 under the utilization research activity "Oilseeds" to expand research on linseed oil and cottonseed oil and meal.

Need for Increase: To alleviate surplus oilseed supplies, expanded research on linseed and cottonseed oils is needed at this time. Intensified research on these oils would aid in (1) reestablishing them in industrial uses in which they have been supplanted by synthetics; (2) developing new uses for them; and (3) expanding current markets for them through the development of new and improved qualities.

Linseed oil. Flaxseed is an important crop, especially in the States of North and South Dakota and Minnesota. Current acreage is 5.5 to 6 million acres. Flaxseed is the source of linseed oil, the principle drying oil used in protective coatings. New synthetic products, based largely on petroleum, are displacing vegetable oils in that field. The use of drying oils per gallon of paint, varnish, or lacquer, has dropped from 2.4 to 1.4 pounds in the last 20 years. If the composition of paints were the same as 20 years ago, half a billion more pounds of vegetable oils would be used annually. There is great need to expand research on linseed oil to discover the chemical reactions through which it can be converted into improved materials for paints so as to increase its use in the protective coating field.

A major opportunity for substantially increased utilization of linseed oil also lies in the broad field of industrial products, such as plastics, special lubricants, rubber-like materials, stabilizers for asphalt and other compositions used for road building, etc. At the present time, synthetic organic chemicals from petroleum and coal have captured most of this market for 6 billion pounds of chemicals per year. The use of linseed and soybean oils in this field is less than 0.2 billion pounds per year. There is urgent need for research on the chemical modifications of linseed oil which will increase its use in the industrial products field.

Cottonseed oil and meal. Research is needed to increase the utilization of cottonseed and its products by finding new and expanded markets for cottonseed oil and meal. For example, the use of cottonseed oil could be expanded through studies to develop new uses for the oil in confectioners' coatings and in new-type fat coatings for food products and through improving the color of cotton-seed oil to increase its market in the edible oil field. While substantial advances have been made in the improvement of the quality of cottonseed meal for feeds for ruminants, additional research is needed to expand its use as a feed for nonruminants, especially for poultry. The low quality of protein in most processed cottonseed meals and the presence in the meal of gossypol or gossypol derivatives make it undesirable for swine and poultry feeding. Gossypol and gossypol derivatives are toxic for swine and poultry and they also affect egg yolk coloration. The conditions which destroy amino acids essential to nonruminant nutrition, and the gossypol derivatives responsible for toxicity and egg yolk coloration need to be determined in order to provide high quality meal.

Plan of Work: Research on linseed oil by the Northern Utilization Research Laboratory, Peoria, Illinois, would be expanded to:

1. Initiate work to make it more competitive with synthetic products now being used for paint;
2. Develop and evaluate new chemical compounds from the oil useful in the manufacture of plastics, special lubricants, and other industrial products;
3. Initiate studies on the composition of linseed and linsced oil to determine the relationship of certain components to drying properties of the oil and to aid processors in selecting oil for various industrial uses.

Research on cottonseed oil and meal by the Southern Utilization Research Laboratory, New Orleans, Louisiana, would be expanded to:

1. Determine the processing conditions necessary to retain in the meal amino acids essential to nonruminant nutrition;
2. Determine the gossypol derivatives in the meal which are toxic and responsible for egg yolk discoloration and develop methods for removing them;
3. Determine the quantity of various minor components in cottonseed oil and meal that might be made available for commercial use.

(15) Increase of \$104,000 under the utilization research activity "Poultry, Dairy, and Animal Products" to expand research on animal fats.

Need for Increase: Development of synthetic detergents has deprived inedible fats (tallow and grease) of their principal outlet, the soap market. In 1955 the excess of 1.3 billion pounds of inedible

fats over domestic needs was disposed of through exports at relatively low prices. Development of numerous, diverse, high-value, large-volume industrial uses is needed to dispose of this surplus at better prices.

The possibilities of research in this field have already been demonstrated. Department research has resulted in the use of fatty materials as stabilizing plasticizers with a potential annual market well over 100 million pounds. Research has also demonstrated that inedible animal fats can be used in hot-dip tin-plate manufacture and the United States is no longer dependent on imported palm oil for this purpose. Another important outlet is the use of stabilized animal fats in animal feeds which already ranges up to 250 million pounds per year and is growing. A large chemical manufacturer has announced construction of a plant to produce a million pounds of vinyl stearate per year, a compound developed by the Department which shows great promise for use in flexible plastics and protective coatings.

Expanded research would permit study of many other opportunities. Each year 18 billion pounds of lubricants are consumed. There is undoubtedly an opportunity to use in this industry large quantities of synthetic fatty compounds, such as the sulfur and phosphorus derivatives. There are many possibilities for the use of fat derivatives in plastics, a tremendous and growing market. The growing synthetic detergent market also offers opportunities to use the new types of detergents derived from fats.

Plan of Work: Research under this increase initially would be directed to derivatives of animal fats for potential use in the preparation of greases, lubricant additives and agricultural chemicals; improvement of the methods for fractionation and determination of the fatty constituents of animal tissues; and the preparation of new types of plastics from animal fats. The proposed work would be conducted by the Eastern Utilization Research Laboratory.

The net decrease of \$2,810,000 under the subappropriation item "Plant and animal disease and pest control" for 1958 consists of:

(16) Net decrease of \$3,930,000 under the activity, "Plant pest control" composed of:

(a) Decrease of \$4,080,000 under the "Contingency Fund" for control of emergency outbreaks of insects and plant diseases.

The following table shows the programs which have been financed from the Contingency Fund during the past three fiscal years:

Contingency Fund

Project	Fiscal Year		
	1955	1956	Anticipated
			Requirements
			1957
Releases for Control of Emergency Outbreaks of Insects:			
Burrowing nematode	\$35,000:	\$150,000:	\$500,000
European chafer	50,000:	83,000:	110,000
Grasshoppers and Mormon crickets	284,300:	566,000:	455,000
Khapra beetle	156,000:	684,000:	905,000
Mediterranean fruit fly	- - :	- - :	a/4,675,000
Mexican fruit fly	125,000:	137,000:	135,000
Soybean nematode	- - :	30,000:	120,000
Total releases or anticipated requirements	650,300:	1,650,000:	6,900,000
Balance in Contingency Fund	399,700:	- - :	- -
Total available	1,050,000:	1,650,000:	6,900,000

a/ Includes \$1,250,000 immediately available in fiscal year 1956 for control of Medfly.

As shown by this table, the needs of the programs financed from the Contingency Fund have been so great during the past two years that the fund has lost its purpose, namely, to be a reserve fund available for release as needed for the control of incipient and emergency outbreaks of insect pests and plant diseases, and if not so used to revert to the Treasury.

It is expected that funds will be required for each of above indicated control programs in fiscal year 1958. However, in view of the progress that has been made toward eradication, it is anticipated that the khapra beetle and Medfly programs will be adjusted to a survey and mop-up type of operation in fiscal year 1958. It is expected that the cost of these two programs will be reduced by approximately \$5,080,000.

The 1958 Budget includes \$1,820,000 to provide for the anticipated needs of those programs which will be continued in 1958 as a part of the regular plant pest control item. This estimate is based on past experience, and an

appraisal of the current status of such programs for the burrowing nematode, European chafer, and soybean nematode. It provides for the necessary inspection to prevent a reoccurrence of the Medfly and khapra beetle, and continues the Mexican fruit fly control program at its present minimum level. The estimate for grasshopper control is based on the average amounts used over the past four years from the Contingency Fund for grasshopper and Mormon cricket control.

It is proposed to provide an uncommitted balance of \$1,000,000 in the Contingency Fund to be used in combating unforeseeable incipient and emergency infestations. Thus the Contingency Fund would represent a true reserve for use in dealing with the unexpected. If not so required, the remaining funds would revert to the Treasury. Based on past experience, such a Contingency Fund in the amount of \$1,000,000 would be adequate in most years.

After providing \$1,820,000 for those foreseeable items previously financed from the Contingency Fund and the provision of a Contingency Fund of \$1,000,000, a net decrease of \$4,080,000 is proposed, as shown by the following table:

Contingency Fund

Project	Anticipated Requirements 1957	1958 Needs Included in Regular Pest Control Item	Decrease
Burrowing nematode	\$500,000	\$500,000	- -
European chafer	110,000	110,000	- -
Grasshopper and Mormon cricket ..	455,000	455,000	- -
Khapra beetle	905,000	250,000	-\$655,000
Mediterranean fruit fly	4,675,000	250,000	-4,425,000
Mexican fruit fly	135,000	135,000	- -
Soybean nematode	120,000	120,000	- -
	6,900,000	1,820,000	-5,080,000
Contingency Fund for Unfore- seeable Emergencies in 1958			+1,000,000
Decrease			-4,080,000

(b) Increase of \$120,000 for evaluation of registered labeling on marketed products to determine compliance with Public Law 518.

Need for Increase: With the enactment of P. L. 518, 83rd Congress, approved July 22, 1954, it was the legislative intent that the administration of that law and the Federal Insecticide, Fungicide, and Rodenticide Act should be coordinated so that the use of products registered under the latter statute would not violate P. L. 518. The increase is needed to achieve such coordination. More than 23,000 chemical formulations have been registered under the Federal Insecticide, Fungicide, and Rodenticide Act for use on food or feed crops. Presently

tolerances have been established for only 78 of approximately 250 chemicals involved. These established tolerances cover only about one-half of the registered raw agricultural commodity uses. New chemicals are being introduced and old formulations are continuously being revised, thereby creating an increasing workload. There is urgent need for expanding the present staff to meet the workload and to assure growers, experiment station and extension personnel, and State regulatory officials that registered labeling is compatible with P. L. 518 and may be relied upon to keep pesticide residues on food crops within the limits established by law.

Plan of Work: Additional personnel would be employed to:

1. Make evaluation of registered directions for the use of products regulated under provisions of P. L. 518 to see if they will meet established tolerances since enactment of this legislation.
2. Segregate those registered uses which do not require a tolerance because they do not leave residues.
3. Insure a current review of registered labeling for which re-registration is requested at the end of the 5-year period, specified in the Act, and
4. Conduct a more thorough survey of labels being used in marketing products regulated by P. L. 518 to see that they are in compliance with the law.

(c) Increase of \$30,000 to construct a greenhouse and headhouse at Beltsville, Maryland for testing work under the Federal Insecticide, Fungicide, and Rodenticide Act.

Need for Increase: An additional greenhouse and headhouse are needed at Beltsville to (1) grow test plants in an environment totally free of contaminating pesticides; (2) store volatile test material; and (3) test and evaluate the safety and effectiveness of new pesticides developed by industry and submitted for registration under the Act. With the limited greenhouse and headhouse space now available at Beltsville, it is impossible to produce the quantity of uncontaminated plants needed for test purposes.

Building Plan: It is planned to provide 3 structures as follows:

1. One new greenhouse, approximately 16 x 35 feet, equipped with automatic ventilating controls, hot water circulating pumps and thermostats. The structure would have two compartments. The cost is estimated at \$5,500.
2. A headhouse of brick or cinder-block construction, approximately 28 x 56 feet, to replace present temporary housing and serve as a headhouse connecting with two existing greenhouses and the new greenhouse described in (1) above. It would contain laboratory and work areas, storage rooms, etc. with related equipment. The cost is estimated at \$21,000.

3. A storage building, approximately 15 x 20 feet, to be located at least fifty feet from the greenhouses for storing volatile chemicals, solvents, and pesticide samples being tested. The building would be of brick or cinder-block construction, and contain two rooms of equal size and a storage cellar for root crops being used as test crops. The structure would not require heat or windows, but would be ventilated. The cost is estimated at \$3,500.

(17) Increase of \$520,000 under the activity "Plant quarantine" to strengthen plant quarantine inspection services.

Problem and Need: In excess of 245,000 lots of unauthorized plants and plant products were intercepted at ports of entry during the fiscal year 1956. This represented an increase of 13% over the previous year. From this material were taken destructive foreign pests of virtually every crop grown in this country.

The inspection problem is becoming more serious and difficult because of the opening of new traffic lanes, and by the more frequent use of interior air bases by military aircraft. During the fiscal year 1956, plane arrivals increase 9% over the previous year; passengers arriving by air increased 20%, and automobiles entering from Mexico, 13%. It is anticipated that a similar increase will occur in fiscal year 1958, and that the additional workload will be beyond the capacity of the existing staff.

The following tabulation shows the increase in workload at the United States ports of entry:

	FY 1955	FY 1956	FY 1957 (Estimated)	Percent Increase 1957 over 1955 1956	
<u>Inspection:</u>					
Airplanes	89,205	97,351	110,000	23.3	13.0
Vessels	48,205	54,712	55,500	15.1	1.4
In cooperation with Customs:					
Baggage, air- borne, pieces of	4,592,254	5,880,433	10,000,000	117.8	70.0
Baggage with auto and rail passengers from					
Mexico	4,107,413	4,640,249	5,150,000	26.0	10.0
Vehicles from Mexico ...	15,240,649	17,262,188	20,000,000	31.2	15.9

Recent introductions of the Medfly and khapra beetle are forceful reminders of the cost of dealing with introduced pests once they become established in this country. The immediate problem is to adequately

staff existing ports of entry, and new ones as they are commissioned, to handle the rapidly expanding international travel and trade in commodities.

In view of the substantial increase in the number of incoming passengers anticipated in fiscal year 1958, the increasing number of ports-of-entry which need to be covered, and the need for expanding the informational work to educate travelers on plant quarantine restrictions and the need for them, it is estimated that for fiscal year 1958, an increase will be needed of \$520,000, or approximately 12% more than the appropriation of \$4,087,200 for fiscal year 1957.

Although Congress provided an increase of \$800,000 in the Agricultural Appropriation Act for fiscal year 1957 to permit Customs to return to essentially a complete inspection of baggage, and \$110,300 to increase the plant quarantine inspection service at various ports of entry, the problem continues to be urgent because of the unprecedented increase in traffic.

Plan of Work: It is proposed to strengthen the work by increasing the inspection force by about 60. New recruits would be given an intensive 6-months' training to equip them for duty in the shortest time possible, and if found qualified they would be assigned, on the basis of current developments and trends, to strategic points along the Mexican border, because of the ever-increasing number of vehicles entering, and at various ocean ports, international bridges, airports and entry gates. Locations to be strengthened would include such points as: San Luis, Arizona, where the discovery in March, 1956, of the khapra beetle just across the border and the increasing agricultural developments on both sides of the border contribute to the growing importance of this port as one which should be adequately staffed; Calexico, California, because of the opening of a new entry gate from Mexicali, Mexico; Ramie Air Force Base, Puerto Rico, and Patrick Air Force Base in Florida to provide adequate plant quarantine inspection of foreign flights principally from Africa and the Caribbean area; a new international bridge at El Paso and a new air terminal at Miami which will require complete additional inspection staffs; Wilmington, N. C., where increasing importations of agricultural products and the recent construction of large commercial fumigation facilities will necessitate plant quarantine services; and Cleveland, Ohio, where there has been a marked increase in imports from foreign countries.

Whenever practicable surveys will be made in foreign countries to determine pest conditions and facilitate effective planning of future operations. Visual aids concerning plant quarantine enforcement and other methods will be developed for use in educating travelers in the need for, and nature of, the plant quarantine restrictions.

(18) Increase of \$240,000 under the activity "Animal disease control and eradication" to strengthen the diagnosis, control, and eradication of miscellaneous livestock diseases.

Need for Increase: The livestock industry of this country, valued at around \$11 billion, is vulnerable to many diseases which, if allowed to go undetected might reach epidemic proportions and cause heavy losses.

In some instances, very serious diseases show symptoms which are indistinguishable from less serious diseases. It is essential that an adequate system of diagnosis, eradication, and control of diseases be maintained to prevent incipient outbreaks from becoming serious epidemics.

The diagnosis, control, and eradication of miscellaneous livestock diseases needs to be strengthened, especially in four areas as follows:

1. Scrapie. Scrapie (a disease of sheep) is one of the foreign diseases that has gained entry into this country. Losses from it at this time are not great, but if it should become established, the losses in the flocks would be of significant proportions. There are 464,380 sheep in 1,883 flocks which may have been exposed to the disease, and inspections of these sheep must be conducted for 3 years or more, the incubation period of the disease. Veterinarians are needed for these inspections and in addition there may be some increase in the cost of indemnities for sheep destroyed.
2. Vesicular diseases. In view of the presence of foot-and-mouth disease during recent years in both Canada and Mexico, it is extremely important that all conditions suspected of being vesicular in nature be investigated promptly and correctly identified. During the past year, vesicular stomatitis has been diagnosed with increasing frequency, especially in the Southeastern part of the country. It sometimes appears outside this area, often in an atypical form, resulting in erroneous diagnosis. Additional diagnosticians are required to keep pace with the increasing workload and a diagnostic training school needs to be conducted to provide specialized training of veterinarians.
3. Control of miscellaneous diseases already present in this country. The increasing occurrence of a variety of diseases including anaplasmosis, bluetongue, leptospirosis, and the new mucosal diseases, are resulting in numerous requests, consultation, and, in some cases, the establishment of limited control measures. Additional veterinarians are needed to meet the demand for inspection services which need to be furnished.
4. Poultry diseases. The rapidly expanding poultry industry is now valued at some \$3.5 billion. It is estimated that losses to this industry from diseases approximate \$240 million a year. Recent virulent outbreaks of Newcastle disease and ornithosis in turkeys point to the need for strengthening the program in this field. The establishment of definite program procedures and policies with the States needs to be accelerated in consultation with experts in the livestock and veterinary field.

Plan of Work: The proposed increase would provide primarily for the employment of veterinarians needed to carry out the various programs described above which are nationwide in scope. In addition, training schools would be conducted to train veterinarians in the accurate diagnosis of these miscellaneous domestic and exotic foreign

diseases to increase the accuracy of disease diagnosis and to permit prompt initiation of measures to control incipient outbreaks.

(19) Increase of \$360,000 under the activity "Animal inspection and quarantine" composed of:

(a) Increase of \$204,000 to provide better inspection coverage to establishments producing biologics and to strengthen the testing of veterinary biologics.

Need for Increase: The value of biological products used in the prevention and treatment of diseases of animals is estimated at \$70 million annually. The Department is responsible for seeing that the biologics purchased by livestock and poultry raisers for the treatment of their animals and poultry are pure, safe, and potent.

Many new and revolutionary veterinary biologic products have been placed on the market which have created new problems heretofore not experienced in determining the safety, purity, and potency of biologics proposed for licensing, general distribution, and use by the livestock and poultry industries. The Department now provides limited inspection of such products but does not test them. In the case of anti-hog cholera serum and hog cholera virus, 100% inspection is provided.

Improved testing and inspection of the production of veterinary biologics would give the livestock raisers confidence that the products which they are using will protect their animals against diseases, without harmful effects. Confusion already exists in the livestock and poultry industries with respect to the use of some veterinary biologics and failure to adequately test and inspect the products will add to the confusion. Many livestock owners, State research and regulatory personnel, national and local poultry organizations, the U. S. Livestock Sanitary Association, and others, have questioned the potency and safety of biological products now in use, and are concerned about possible hazards and dangers of newly-developed revolutionary biologics. These organizations have criticized the Department's program as being inadequate. The proposed increase would be used to expand the testing of biologics, before and after licensing, as the most conclusive method of determining their purity, safety, and potency.

Plan of Work: The program for the inspection of the production of veterinary biologics would be strengthened and additional standards and techniques would be developed for assuring the production of safe, potent, and uncontaminated biologics. The testing of biologics, both before and after licensing would be contracted with outside sources until the Animal Disease Laboratory, for which funds were appropriated in fiscal year 1957, is completed. The benefits from an improved testing and inspection program will be realized by the livestock and poultry industry almost immediately.

(b) Increase of \$156,000 to construct facilities for livestock inspection at four ports of entry.

Need for Increase: Veterinary inspection of livestock being imported is mandatory by laws designed to protect this country's vast livestock industry against foreign diseases. There are 52 designated ports of entry along the United States-Canada border. At a number of these ports, present facilities do not permit adequate inspection, detention, and humane handling of import animals nor do they afford suitable and proper working conditions for inspection personnel. The increase requested provides for the construction of 4 such facilities at the ports of entry where most needed.

The proposed structures would facilitate a careful veterinary inspection of each animal being offered for importation into this country by providing for proper restraint of animals under sanitary conditions. Such facilities would likewise reduce accidental injury of livestock and exposure to inclement weather. The restraining devices installed in the facilities are needed to afford protection to Department and other governmental personnel, such as Customs representatives, who are required to be in close contact with the animals in the performance of their official duties.

Proposed Construction: Inspection facilities would be constructed at four ports of entry presently expected to be Houlton, Maine; Noyes, Minnesota; Ogdensburg, New York and Portal, North Dakota. Each would consist of one main building constructed of cement block with gabled roof. Because of the large numbers of animals imported through Noyes and Portal, it is planned to have additional covered concrete floored pens on both ends of these buildings. It is estimated that the facilities at Noyes and Portal would cost approximately \$44,500 each and at Houlton and Ogdensburg \$33,500 each, a total of \$156,000. An effort would be made to have the land for the buildings donated to the Government but it may be necessary to spend a small amount for land acquisition.

(20) Increase of \$2,132,000 under "Meat inspection" for meeting an increasing work-load for higher pay costs due to changes in position standards, and for furnishing washable outer garments to inspectors.

Need for Increase: Additional funds are needed for meat inspection to:

- | | |
|---|--------------------|
| a. Increase the inspection force because of the sharply rising demands for inspection service | +\$1,212,000 |
| b. Meet higher pay costs due to changes in meat inspector position standards | +590,000 |
| c. Furnish meat inspectors washable outer garments to protect meat and meat products from contamination | +330,000 |
| Total increase | <u>+ 2,132,000</u> |

Increased demands for Meat Inspection Service: There is a sharp rise in the number of meat packing plants for which inspection is needed. Several factors are contributing to this increase in the demands by plants for inspection:

- a. More and more meat packers are decentralizing their operations and are conducting business subject to the law and are qualifying for the inspection. Also packers located outside meat packing centers and already under the inspection are increasing their facilities and numbers of work-day shifts requiring additional inspection service. This requires extending the inspection organization both in terms of manpower and points of operation.
- b. Institutional and chain-store buying, which is becoming more and more a factor in meat distribution, requires the seller to deliver inspected meats so that they may be moved freely in interstate commerce. Chain-store merchandising has placed emphasis on meat inspection.
- c. The military, the Veterans' Administration, and other Government agencies will buy only from Federally inspected plants.
- d. The public demand for inspected meat is influencing many meat packers to come under the Federal program.

The inspection routines constitute an integral part in the production process in the inspected plant. The inspectors work side-by-side with meat-packing plant production men, each with his specialized duties that, taken together, convert food animals into clean, wholesome, disease-free, unadulterated and properly identified meat and meat food products. Because the inspection procedure constitutes a step in the production process, the efficiency of that process depends on the inspection phase being adequately manned with inspection personnel. The inability, because of shortage of inspection personnel, to adequately man the inspection positions immediately makes itself felt in the economy of the inspected packer's operation and increases his production costs. Packers, at the last convention of the National Independent Meat Packers Association, expressed concern over their increased production costs because of insufficient inspectors. The Western States Meat Packers Association and many meat packers acting independently, also recognizing this problem, have requested the Department to employ sufficient meat inspectors to meet the demands.

Based on present trends, as shown in the accompanying table, it is estimated that 96 additional meat packing plants will require meat inspection service in 1958 as compared to June 30, 1957, an increase of 7.6%. This makes a total of 1,364 plants requiring such service in 1958 as compared with 1,268 in 1957 and 1,184 on June 30, 1956. In many other cases in lieu of building a new plant or enlarging present facilities, establishments are going to extra shifts. For example, a plant slaughtering 10 hours a day may change to two 8 hour shifts, thus getting the desired increase in production and at the same time reducing or eliminating overtime. The volume of processed meat food products in plants is increasing and creates the need for more inspectors. To take care of the estimated additional work load will require 192 man-years of employment, at an estimated cost of \$1,212,000 in fiscal year 1958.

These needs do not reflect the additional demand for meat inspectors due to a larger volume of meat products being inspected as the result of increasing livestock production or due to temporarily heavier slaughter of livestock because of fluctuating market conditions. Fluctuations in volume of meat inspected at individual plants ordinarily are covered by reimbursable overtime rather than an increase in the basic cost of inspection. Packing plants and others are already criticizing the amount of reimbursable overtime being required; therefore, additional reimbursable overtime is not the answer to the need for additional funds to meet increased inspection needs and higher pay costs.

Higher pay costs. The present salary schedules for veterinarians and meat inspectors are far below rates paid by industry and other fields of employment. Nearly two years ago the meat inspection employees requested the Department to make studies to determine the adequacy of the meat inspector position standards. This has now been done. Proposed revisions have been developed and submitted to the Civil Service Commission for consideration. It is expected that the Commission will approve them to become effective by July 1, 1957. This will mean a significant change in the meat inspector grades, estimated to cost, on an annual basis, as follows:

<u>Grade</u>		<u>Number</u>	<u>At Old</u>	<u>At New</u>	<u>Cost on</u> <u>Annual Basis</u>
<u>From</u>	<u>To</u>		<u>Rate</u>	<u>Rate</u>	
GS-3	5	59	\$189,450	\$217,340	\$27,890
4	5	441	1,569,680	1,657,755	88,075
5	7	847	3,625,000	3,917,860	292,860
6	7	437	2,102,775	2,183,435	80,660
7	9	200	1,047,560	1,107,710	60,150
8	9	21	119,895	124,095	4,200
10	11	4	25,685	26,850	1,165
Subtotal .. 2,009			8,680,045	9,235,045	555,000
Contribution to the retirement fund					35,000
Total 2,009			8,680,045	9,235,045	590,000

Since this program is already understaffed, there is no opportunity to absorb these costs. Unless additional funds are provided, the only alternative way in which to meet the increased costs would be to reduce the meat inspection force by approximately 103 man-years. Such a reduction would make it virtually impossible to provide an inspection service adequate to assure that only healthy animals are processed for food, that all meat passed by the inspection is sound, healthful, wholesome, and fit for human food, and that there is no adulteration or mislabeling of products.

Furnishing washable outer garments to inspectors. One of the important requirements of the meat inspection service is that all inspectors who handle the meat and meat products, observe strict sanitary requirements, one of which is that suitable outer clothing be worn for the protection of the meat and meat-food products. The present regulations stipulate

that such garments shall be furnished by the Federal inspector. The code of Federal Regulations, Title 9, Section 7.6, among other requirements covering sanitation, states "Inspectors shall furnish their own work clothing". The furnishing of such clothing, therefore, has been considered mandatory before an inspector could be assigned for meat inspection at an approved plant. It has now been determined that Federal inspectors cannot reasonably be required to continue to furnish such outer garments at personal expense since these garments are considered necessary for the protection of the product against contamination. In fact, the main object of meat inspection would be defeated if proper sanitary measures were not taken to protect the product.

It is proposed to initiate in 1958 the furnishing of outer garments to all Federal inspectors. The garments would consist of coats, trousers and shirts (or overalls), and caps, according to need. A survey has been made of the requirements taking into consideration the different kinds of work performed, the need for extra garments due to the frequency of laundry pickup and delivery service, the need of extra garments for peak employment and turnover, and loss and damage to garments. It has been found that certain types of work require the changing to clean outer garments daily, whereas other types of work require clean garments only on alternate days.

These garments would be the property of the Federal government and would be accounted for as such. Usable garments would be turned in by inspectors upon their leaving the service and would be reissued to other inspectors as needed. Laundry for these garments is now furnished by the meat packers by regulation and, therefore, is not provided for in this estimate.

It is planned generally that employees involved would be authorized to purchase specified items of clothing locally through the issuance of a purchase order, or in a letter of authorization for which the employee would be reimbursed. Either of these methods would minimize the problem of garment size and make it possible to conform more readily to local custom and climatic conditions.

The annual cost for providing protective clothing for inspectors is estimated as follows:

COST OF GARMENTS				
Garment	: Number of	: Unit	: Annual:	: TOTAL
	: Employees	: Cost	: Need	: COST
MEAT INSPECTION	:	:	:	:
Post Mortem:	:	:	:	:
White Coats	: - -	: \$6.00	: 4	: \$55,200
White Trousers or over-	:	:	:	:
alls a/.....	: - -	: 4.50	: 7	: 72,450
White Shirts a/.....	: - -	: 3.50	: 7	: 56,350
White Caps	: - -	: 1.00	: 2	: 4,600
	: 2,300	: - -	: - -	: 188,600
Processing:	:	:	:	:
White Coats	: - -	: 6.00	: 7	: 46,200
White Trousers or over-	:	:	:	:
alls a/	: - -	: 4.50	: 4	: 19,800
White Shirts a/	: - -	: 3.50	: 4	: 15,400
White Caps	: - -	: 1.00	: 2	: 2,200
	: 1,100	: - -	: - -	: 83,600
Subtotal	: 3,400	: - -	: - -	: 272,200

Estimated additional cost due to other factors, such as turnover, peak employment, loss, damage, maintenance and repair, and administration	57,800
Grand Total	<u>330,000</u>

a/ Coveralls may be substituted for shirts and trousers.

Plan of Work: It is proposed to add approximately 183 veterinarians and lay inspectors to meet the rapidly expanding requirements for Federal meat inspection. The funds provided to meet higher pay costs and to purchase outer garments for inspectors would not in itself increase the inspection force, but would aid materially in assuring the hiring and retention of the best qualified inspectors.

Meat Inspection

Comparison of man-power and work-load

(Percent change since 1949)

Fiscal Year	Man-years		Location served (end of year)		Slaughter		Volume Inspected		Processed Products	
	Number	% Change	Plants	% Change	Cities & Towns	% Change	Number	% Change	Pounds	% Change
1949	3,299	- -	928	- -	364	- -	83,458,786	- -	13,381,083,144	- -
1954	3,174	-3.8	1,067	+14.9	410	+12.6	90,928,932	+8.9	14,833,471,229	+10.8
1955	3,164	-4.1	1,120	+20.6	435	+19.5	98,200,397	+17.6	16,373,853,029	+22.3
1956	3,151	-4.5	1,184	+27.6	471	+29.4	108,546,583	+30.1	18,207,298,082	+36.1
1957 (est.)	3,221	-2.4	1,268	+36.6	509	+39.8	104,419,481	+25.1	18,000,000,000	+34.5
1958 (est.)	3,413	+3.4	1,364	+47.0	545	+49.7	108,722,400	+30.3	18,300,000,000	+38.8

(21) An increase of \$4,138,000 is required to meet retirement costs under Public Law 854 applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes.

Development Program for the National Arboretum

Legislative Authorization

Under the Act of March 4, 1927 (20 U.S.C. 191-194), the Secretary of Agriculture is authorized and directed to establish and maintain a National Arboretum for purposes of research and education concerning tree and plant life. A council created under Section 4 of this Act advises the Secretary of Agriculture on planning and developing the National Arboretum.

Status of Development Program

The National Arboretum occupies a site of approximately 400 acres in the District of Columbia. Basic developmental work has largely been done. A program of long-term development, involving the expenditure of \$3,365,243 for roads, trails, buildings, greenhouses, etc., to bring the Arboretum to a fully functioning condition was developed in 1947 in cooperation with the National Arboretum Advisory Council. Progress was slow, however, until \$150,000 was provided for fiscal year 1956 for road construction. An additional \$127,430 provided in fiscal year 1957 brought the development funds to \$277,430, and the operation and maintenance funds to \$222,570, a total of \$500,000. Further road construction and surfacing is now in progress, as well as the construction of a vehicle storage and service building and 2 public comfort stations. Continuation of funds at the same level is being requested in the 1958 Budget Estimates of the Department of Agriculture. In fiscal year 1958 the expenditure of \$177,000 will permit virtual completion of grading and surfacing of all roads, parking areas and overlooks, including two bridges required in such construction, as well as the provision of additional foot trails for public access. \$20,000 will be used for stream channel correction, provision of a water gate and replacement of fencing lost through previous erosion. \$10,000 will be used for 2 open-sided public shelters, and for drinking fountains; \$40,000 for revision of plans for the needed Headquarters and Laboratory building. The present allotment for operation and maintenance will be increased by approximately \$30,000 to permit more rapid development of the plant collections, and to meet additional operating and maintenance costs.

To complete the development program in future years there will remain the Headquarters and Laboratory building, which will include rooms for the herbarium (now housed at Beltsville), greenhouses, 2 residences (for resident guard and plant propagator in charge of the greenhouses), entrance gates, and extension of foot trails and utility facilities.

During fiscal year 1956, the Arboretum was fully open to the public, with guards in attendance, for five weekends beginning in mid-April, primarily during the azalea and other spring flowering season. Upwards of 40,000 persons attended during this period and many additional groups and individuals have been received by appointment throughout the year. With the current provision of roads, parking areas and comfort stations it is expected to have the Arboretum fully open to the general public by the fall of calendar year 1957.

A summary of the estimated cost of the development program is shown by the following table.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE

National Arboretum

	Obligations	Estimated	Budget	Future	Total
	1948-55	1956	1957	Years	
A. Development of physical facilities:					
1. Acquisition of land.....	\$ 286,185				\$ 286,185
2. Preparation of plans and specifications for buildings, roads, and other facilities.....	135,100		\$40,000		175,100
3. Buildings:					
Headquarters office and laboratory buildings					
providing rooms for an herbarium, library, group meetings, exhibits, and offices, and designed for future extensions					
Greenhouse facilities					
Residences (2):					
Propagator's residence.....				\$1,200,000:	1,200,000
Guard's residence.....				291,000:	291,000
Entrance facilities:					
Guardhouse, restrooms (including sewer lines and septic system).....				23,000:	23,000
Entrance gates, drinking fountains, public shelters etc.....				19,000:	19,000
Service Buildings:					
Motor vehicle buildings and shop					
Farm machinery buildings.....	18,000		65,000		65,000
Total, buildings.....	38,000	96,000	10,000	50,000:	18,000
				1,583,000:	1,727,000

	Obligations:	Obligations:	Estimated :	Budget	Future	Total
	1948-55	1956	1957	1958	years	
A. Development of physical facilities -- Cont.						
4. Roads:						
Roads (7.5 miles), bridges and roadside grading	\$ 146,700	\$ 150,000	\$ 140,000	\$ 150,000	\$ 55,000	\$ 641,700
9 miles of footpaths and trails, parking areas and overlooks	16,000	---	10,000	27,000		178,000
Total, roads	162,700	150,000	150,000	177,000	180,000	819,700
5. Utilities:						
Water supply, sewage and electric lines	92,900	---	---	---	47,000	139,900
6. Equipment	24,500	---	---	---	30,000	54,500
7. Fencing, grading, repairs and miscellaneous	104,858	---	31,430	20,000	6,570	162,858
Total, physical facilities and land	844,243	150,000	277,430	247,000	1,846,570	3,365,243
B. Operation and Maintenance	923,139	222,570	222,570	265,500	400,000 ^{a/}	---
Total, National Arboretum	1,767,385	372,570	500,000	512,500	---	---

a/ Per Annum



EXPANDED BRUCELLOSIS PROGRAM

(Conducted with funds transferred from Commodity Credit Corporation)

	<u>1956</u>	<u>1957</u> <u>(Estimated)</u>	<u>1958</u> <u>(Estimated)</u>
Obligations	\$16,236,222	\$20,000,000	\$20,000,000

Legislative Authorization

Under Section 204(e) of Title II of the Agricultural Act of 1954, Public Law 690, approved August 28, 1954, provision was made for the transfer of not to exceed \$15,000,000 annually for a period of two years from funds available to the Commodity Credit Corporation to the item "Plant and Animal Disease and Pest Control" of the appropriation "Salaries and Expenses, Agricultural Research Service," for the purpose of accelerating the brucellosis eradication program. This section was further amended by Public Law 465, approved April 2, 1956, to increase the amount for the fiscal year 1956 to \$17,000,000 and the amount for each of the fiscal years 1957 and 1958 to \$20,000,000.

Program Operations

Considerable progress was made in all fields of operation during fiscal year 1956. Most of the testing service required was provided by practicing veterinarians employed on a fee basis. While Federal indemnities were paid in most States at a rate not exceeding \$25 for grade animals and \$50 for purebred animals, it was held below this level, or eliminated entirely, in a few States. Although the majority of the States also made indemnity payments to owners for reacting cattle, there were eight States in which neither State nor Federal indemnity was paid. There was an encouraging decrease in the percentage of reactors disclosed in cattle tested and an increase in the percentage of reactors slaughtered. Detailed information concerning the 1956 program, including tables and charts, is contained in the "Status of Program" section of these explanatory notes.

Cost of Program

The following table compares actual State and Federal expenditures for fiscal years 1955 and 1956 with estimated State and Federal expenses for fiscal years 1957 and 1958.

	<u>F. Y. 1955</u>	<u>F. Y. 1956</u>	<u>F.Y. 1957</u> <u>(estimated)</u>	<u>F.Y. 1958</u> <u>(estimated)</u>
A. Federal Cost:				
Operating funds..	\$10,718,791	\$14,125,249	\$18,078,618	\$17,639,300
Indemnities.....	4,614,606	6,060,351	5,882,547	6,500,000
Total.....	15,333,397	20,185,600	23,961,165	24,139,300
Less amount provided under				
Salaries and Expenses, ARS.....	-3,774,700	-3,961,165	-3,961,165	-4,139,300
Cost of accelerated program....	11,558,697	16,224,435	20,000,000	20,000,000

	<u>F.Y. 1955</u>	<u>F.Y. 1956</u>	<u>F. Y. 1957 (estimated)</u>
B. Funds provided by cooperat- ing States and counties:			
Operating funds	\$ 9,497,240	\$11,595,852	\$12,159,444
Indemnities	1,736,491	4,134,627	3,682,118
Total	<u>11,233,731</u>	<u>15,730,479</u>	<u>15,841,562</u>

The estimated distribution of the funds by States for fiscal year 1957 is shown in the table at the end of this statement.

An appropriation to reimburse Commodity Credit Corporation for the costs of the 1956 accelerated program is being requested as a part of the 1958 Budget Estimates. Appropriations to reimburse the Corporation for the cost of the 1957 and 1958 programs will be requested in future years.

Outlook for Current Year

The data listed below show cattle blood tested, reactors found, and calves vaccinated during fiscal years 1955 and 1956 respectively, and estimates for the fiscal year 1957.

	<u>1955</u>	<u>1956</u>	<u>1957 (estimated)</u>
Cattle blood tested	14,186,241	16,754,195	17,576,400
Reactors found	365,247	366,524	394,600
Calves vaccinated	4,381,397	4,772,535	5,606,700

There has been an encouraging increase in the amount of area work leading to certification in the various States. Most of the States are doing everything possible to encourage owners to participate in area programs so that eradication gains may be held and further expanded. The fact that 89% of the reactors found during the fiscal year 1956 were reported as slaughtered indicates that owners are becoming more convinced that it is not profitable to permit brucellosis to remain in their herds.

The five-member committee of consultants appointed by the Secretary of Agriculture to review the accelerated brucellosis eradication program submitted its recommendations on March 28, 1956. Their report indicated that, in general, the present program was working satisfactorily and had the support of the groups contacted. The committee held six regional meetings which were open to the public. During June, 1956, the States of Washington and Wisconsin achieved modified-certified brucellosis free status; Maine, New Hampshire, and North Carolina had already achieved such status. Practically all of the States have set 1960 as a target date for becoming modified-certified brucellosis free. The recommendations of the committee for strengthening the program are being put into effect as rapidly as possible.

A Brucellosis Planning Conference was held in Evanston, Illinois, on November 26 and 27, 1956. At this meeting, a critical review was made of brucellosis program operations in all States. Based on these discussions and projected goals, it is anticipated that by the end of

fiscal year 1957, there will be a total of 9 entire States and Puerto Rico and 400 additional counties qualified as Modified Certified Brucellosis-Free Areas.

Outlook for F. Y. 1958

Major program emphasis during fiscal year 1958 will be placed on expansion of complete area programs which require that all herds in a given area be under one of the three approved plans.

It is expected that the brucellosis ring test will be used more widely than ever before as a means of screening dairy herds for evidence of brucellosis. Increased acceptance of this procedure by the cooperating States will accelerate advancements toward complete control and eventual eradication of brucellosis throughout the country.

Efforts are being directed toward developing a method for screen testing range herds. It is anticipated that during fiscal year 1958, such a method will be developed and approved as an official procedure for use in establishing and maintaining certifications of range and semi-range areas. The screen testing would be accomplished by a system of blood testing dry and cull cows at such concentration points as slaughtering establishments, stockyards, and auction markets to determine the brucellosis status of range herds. This should permit more rapid progress with the brucellosis campaign in range herds at lower cost and less inconvenience to the owner.

In the case of newly certified States, there will be a decrease in program operations. Because of increased work in other States, however, the overall program will continue at about the same level as in fiscal year 1957.



BRUCELLOSIS ERADICATION

Fiscal Year 1957
as of November 30, 1956

STATE	FEDERAL			STATE		
	Indemnity Payments	Operating Cost	Total	Indemnity Payments	Operating Cost	Total
Alabama	\$113,000	\$429,100	\$542,100	\$ - -	\$100,000	\$100,000
Arizona	6,000	86,000	92,000	10,000	37,450	47,450
Arkansas	189,500	388,900	578,400	- -	60,000	60,000
California	- -	255,500	255,500	- -	367,370	367,370
Colorado	45,000	188,400	233,400	- -	33,134	33,134
Connecticut	- -	79,200	79,200	- -	149,540	149,540
Delaware	12,800	38,000	50,800	18,000	37,160	55,160
District of Col.	- -	1,091,965	1,091,965	- -	- -	- -
Florida	126,000	377,400	503,400	87,531	182,755	270,286
Georgia	165,500	568,700	734,200	155,520	256,567	412,087
Idaho	76,300	293,100	369,400	1,000	100,500	101,500
Illinois	259,300	167,800	427,100	- -	1,190,034	1,190,034
Indiana	380,300	543,600	923,900	- -	661,124	661,124
Iowa	250,000	732,500	982,500	250,000	544,000	794,000
Kansas	- -	402,500	402,500	- -	190,000	190,000
Kentucky	160,000	200,500	360,500	- -	350,000	350,000
Louisiana	649,100	536,000	1,185,100	858,000	559,779	1,417,779
Maine	19,000	66,800	85,800	21,000	90,000	111,000
Maryland	100,000	506,700	606,700	152,000	145,035	297,035
Massachusetts	12,000	206,000	218,000	20,000	103,000	123,000
Michigan	276,100	557,100	833,200	5,000	340,228	345,228
Minnesota	177,000	1,080,300	1,257,300	97,000	547,000	644,000
Mississippi	202,500	396,500	599,000	- -	131,500	131,500
Missouri	325,200	949,000	1,274,200	257,180	455,670	712,850
Montana	- -	448,000	448,000	- -	250,000	250,000
Nebraska	167,500	866,100	1,033,600	75,000	235,000	310,000
Nevada	22,000	125,400	147,400	- -	30,900	30,900
New Hampshire	5,000	49,300	54,300	13,000	74,500	87,500
New Jersey	65,900	126,700	192,600	178,000	119,405	297,405
New Mexico	11,600	122,700	134,300	12,000	28,000	40,000
New York	- -	219,400	219,400	- -	1,105,296	1,105,296
North Carolina	32,000	210,100	242,100	15,000	112,482	127,482
North Dakota	211,000	209,500	420,500	- -	180,000	180,000
Ohio	- -	461,500	461,500	- -	335,200	335,200
Oklahoma	20,000	428,100	448,100	- -	80,500	80,500
Oregon	130,000	338,000	468,000	72,000	163,500	235,500
Pennsylvania	450,000	613,700	1,063,700	650,000	650,000	1,300,000
Rhode Island	1,700	29,900	31,600	7,500	27,000	34,500
South Carolina	15,000	260,000	275,000	14,000	106,405	120,405
South Dakota	76,000	297,300	373,300	50,000	50,000	100,000
Tennessee	343,600	507,600	851,200	- -	221,860	221,860
Texas	- -	112,200	112,200	- -	60,000	60,000
Utah	41,000	272,900	313,900	- -	96,000	96,000
Vermont	100,000	189,700	289,700	70,000	50,000	120,000
Virginia	104,500	321,100	425,600	- -	315,290	315,290
Washington	9,000	369,800	378,800	86,250	96,750	183,000
West Virginia	10,000	153,100	163,100	8,000	92,850	100,850
Wisconsin	459,147	741,253	1,200,400	453,137	917,790	1,370,927
Wyoming	12,000	220,300	232,300	- -	18,200	18,200
Puerto Rico	51,000	243,400	294,400	46,000	110,670	156,670
Total	5,882,547	18,078,618	23,961,165	3,682,118	12,159,444	15,841,562

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

- For expenses necessary to perform agricultural research relating to production and utilization, to control and eradicate pests and plant and animal diseases, and to perform related inspection, quarantine and regulatory work, and meat inspection: Provided, That
- 1 not to exceed \$15,000 ~~\$100,000~~ of the appropriations hereunder shall be available for employment pursuant to the second sentence of section 706 (a) of the Organic Act of 1944 (5 U.S.C. 574), as amended by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a): Provided further, That appropriations hereunder shall be available for the operation and maintenance of aircraft and the purchase of not to
 - 2 exceed three, of which two shall be one for replacement only: Provided further, That appropriations hereunder shall be available pursuant to 5 U.S.C. 565a for the construction, alteration, and repair of buildings and improvements, but unless otherwise
 - 3 provided, the cost of constructing any one building (except head-houses connecting greenhouses) shall not exceed \$7,500 ~~\$15,000~~, except for five buildings to be constructed or improved at a cost
 - 4 not to exceed \$25,000 each, and the cost of altering any one building during the fiscal year shall not exceed \$3,750 or two
 - 5 five per centum of the cost of the building, whichever is greater
 - 6 7: Provided further, That appropriations hereunder shall be available for uniforms, or allowances therefor, as authorized by the Act of September 1, 1954, as amended (5 U.S.C. 2131)7:

- Research: For research and demonstrations on the production and utilization of agricultural products, and related research and services, including administration of payments to State agricultural experiment stations; \$49,972,000 ~~\$56,910,000~~: Provided further,
- 6 That not to exceed \$1,850,000 ~~\$1,200,000~~ shall be available for construction of buildings and for the acquisition of necessary land
 - 7 therefor by donation, or exchange, and not to exceed \$75,000
 - 8 \$25,000 for alterations of buildings, without regard to limitations prescribed herein;

- Plant and animal disease and pest control: For operations and measures to control and eradicate pests and plant and animal diseases and for carrying out assigned inspection, quarantine and regulatory activities, as authorized by law; \$26,294,000 ~~\$26,952,000~~, of
- 9 which \$4,400,000 ~~\$1,000,000~~ shall be apportioned for use pursuant to section 3679 of the Revised Statutes, as amended, for the control of outbreaks of insects and plant diseases under the joint resolution approved May 9, 1938 (7 U.S.C. 148-148e), and the Act of August 13, 1954 (7 U.S.C. 148), to the extent necessary to meet emergency con-
 - 10 ditions: Provided further, That \$1,250,000 of such \$4,400,000 shall be immediately available for expenditure for control and eradication of the Mediterranean fruit fly: Provided further,
 - 11 *** : Provided further, That not to exceed \$156,000 shall be available for construction of buildings and for the acquisition of necessary land therefor, without regard to limitations prescribed herein;

- 12 For an additional amount for "Salaries and Expenses," for "plant and animal disease and pest control", \$2,500,000 to be apportioned for use pursuant to section 3679 of the Revised Statutes, as amended, for the control of outbreaks of insects and plant diseases under the joint resolution approved May 9, 1938 (7 U.S.C. 148-148e), and the Act of August 13, 1954 (7 U.S.C. 148), to the extent necessary to meet emergency conditions.

The first change increases from \$15,000 to \$100,000 the limitation relating to employment pursuant to the second sentence of section 706 (a) of the Organic Act of 1944 (5 U.S.C. 574), as amended by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a). This increase is requested to cover under this limitation the employment of experts for consultation purposes under Schedule A authority of the Civil Service Rules and Regulations.

The second sentence of section 706(a) of the Organic Act of 1944 (5 U.S.C. 574) authorizes the Department to employ persons or organizations, by contract or otherwise, without regard to the Classification Act of 1949, when provided in applicable appropriations and within total limitations prescribed therein. Section 15 of the Act of August 2, 1946 (5 U.S.C. 55a) modifies the above provision as to employment of experts and consultants by limiting such employment in any one position to not more than one year and by limiting compensation to rates not in excess of the highest rate payable under the Classification Act of 1949, as amended.

Section 6.101 (n) of Schedule A authorizes the employment without regard to civil service requirements of "professional, scientific, and technical experts for temporary, part-time or intermittent employment for consultation purposes". By agreement with the Civil Service Commission, the Department is authorized to appoint qualified experts, consultants, and advisors without prior approval of the Civil Service Commission, under Schedule A authority or under statutory law authority.

The Department of Agriculture and the Civil Service Commission have understood and assumed that the authority to employ consultants under Schedule A is independent of the authority contained in section 15 of the Act of August 2, 1946 and section 706(a) of the Organic Act of 1944, and that consequently, employment pursuant to Schedule A authority need not be charged to any appropriation limitations which might apply to the statutory authorities. However, recent statements by representatives of the General Accounting Office indicate that the General Accounting Office believes that the authority to employ consultants under Schedule A is not independent of the two statutory authorities to the extent that the costs of compensation paid to Schedule A appointees should be charged to the appropriate appropriation limitations which apply to the statutory authorities. They have further indicated that the GAO will not approve employment of consultants under Schedule A if such employment would result in exceeding an appropriation limitation applicable to section 15 of the Act of August 2, 1946. (General Accounting Office testimony before the Executive and Legislative Reorganization Subcommittee of the House Committee on Government Operations, as reported in the Committee's Twenty-Second Intermediate Report of July 24, 1956, House Report No. 2894, page 11.) The House Committee on Government Operations, in its report of July 24, 1956, took cognizance of the fact that there was some confusion in this area and indicated that the Committee expects to recommend legislation at a future date clarifying the general authority to employ experts and consultants (page 24 of the Report cited above).

In order to cover charges to the limitation for the employment of consultants under Schedule A in fiscal year 1958, it is requested that the limitation be increased by \$85,000. This increase is based on the estimated employment of (a) highly qualified personnel of State agricultural experiment stations to assist the Federal technical staff in reviewing segments of research at State stations (\$30,000); (b) highly specialized consultants for advice in planning and developing utilization research (\$25,000); (c) specialists in plant and animal diseases and pests qualified to give technical advice needed for control programs, especially those of an emergency nature (\$20,000), and (d) technically trained consultants needed for specialized advice in relation to various research problems or regulatory programs (\$10,000).

The need for obtaining consultant services may fluctuate considerably from year to year and by programs. Great difficulty is sometimes encountered in employing on a permanent Civil Service basis the highly trained technical personnel with special skills needed for certain work. The use of consultants for temporary periods may be more economical than employment on permanent basis, and may be the only means of obtaining needed services. In order to provide necessary flexibility in operations, a total limitation of \$100,000 is recommended.

The second change provides for replacement of one airplane used for developing technical procedures for aerial contract specifications and control operations on plant pest control. The new plane would be safer to operate and would be similar to those used by industry.

The third change proposes an increase in the limitation on the maximum cost of constructing any one building, unless otherwise provided, from \$7,500 to \$15,000 and provision for the construction or improvement of a limited number (5) of buildings at a cost not to exceed \$25,000 each.

Most buildings of the Agricultural Research Service are used for research and were built more than 20 years ago, some having been constructed prior to 1900. Many are of frame construction and in poor condition. Many are inadequate for housing modern equipment for production, harvesting, storing and handling farm crops or for meeting the needs of livestock research. There should be systematic replacement of many of these small buildings for the protection of government property, to eliminate high repair costs and to provide better facilities for the conduct of the work and for the handling and storing of valuable products of research.

In the event of emergencies, such as losses from fires or windstorms, it is now necessary to make special requests of Congress for waiver of the \$7,500 construction limitation to replace them, even though they may be urgently needed to protect work or Federal property, and the appropriation of additional funds is not involved. In the 1956 Budget Estimates, a request was made to use not to exceed \$20,000 for the construction of an office and a laboratory building at the Southeastern Tidewater Field Station, Fleming, Georgia. Later in the year as a result of a special request for the replacement of a farm equipment building destroyed by fire, provision was made in the Supplemental Appropriation Act, 1956 that not to exceed \$25,000 of the funds appropriated for fiscal year 1956 shall be available for construction of a building at the United States Range Livestock Experiment Station, Miles City, Montana. In the

1958 Budget Estimates, there is a request to use \$13,000 of presently available funds for the construction of a machinery shed at the Plant Introduction Station, Glenn Dale, Maryland, to replace an old wooden barn and shed which are in poor condition and are fire hazards.

Building costs have increased substantially since the present limitation was made effective. The proposed revision would eliminate the necessity for presenting minor building requirements for the specific approval of Congress and would facilitate meeting emergency needs promptly.

The fourth change proposes raising from 2 to 5 the percentage limitation on alteration costs of buildings. The present percentage is based on original construction costs. This percentage limitation, first made applicable to constituent Bureaus of the Agricultural Research Administration in the 1946 Agricultural Appropriation Act, has never been changed. Retention of the present percentage limitation restricts unduly the needed alterations because such costs have more than trebled since most of the buildings were constructed.

The limitation is especially restrictive for the large laboratories constructed some 20 years ago. For example, the present estimated value of the Northern Utilization Research Laboratory, built about 20 years ago, is about three times its original cost as shown by the following data:

	<u>Original Cost</u>	<u>Present Estimated Value</u>
Main laboratory	\$1,285,171	\$3,806,391
Supporting buildings for service functions, commodity and solvents storage, work shops, garage	<u>381,224</u>	<u>1,014,959</u>
Total	<u>1,666,395</u>	<u>4,821,350</u>

If the limitation were based on present value, alterations of \$76,120 could be made to the main laboratory, but since the 2 percent limitation is based on original cost, maximum alterations of only \$25,703 can be made to the building during an entire fiscal year.

As research progresses it is urgent that laboratories be altered to meet current research needs. This is particularly true in the field of utilization research where advances in this field may be slowed by lack of suitable space for prosecution of studies of important problems. In proceeding with pilot plant and other research, it frequently becomes desirable to alter existing laboratory facilities for the conduct of new phases of research work. Better use of space in existing buildings could often be made if alterations of laboratory rooms, halls, stairs, elevator space, etc., could be made. Sometimes these alterations cannot be made until a request has been presented to Congress and approval obtained. This involves considerable time and delays the work. With the increased funds being made available for utilization research, it is desirable to use the laboratory buildings to the fullest extent possible. The present limitation operates as a handicap in making some of the alterations which would make the conduct of the research work more effective and efficient. To meet this serious problem, it is recommended that the limitation be raised from 2 to 5 percent.

The fifth change provides for deletion of language providing for expenditure of funds for uniforms, or allowances therefor, in accordance with the Act of September 1, 1954, as amended (5 U.S.C. 2131). In the interest of shortening and simplifying the wording of the Appropriation Act, a new general provision is proposed to cover such authority for this and other funds of the Department.

The sixth and eighth changes provide for construction of buildings and for alterations of present buildings in excess of the limitations for construction and alterations set forth in the preamble, estimated as follows:

Construction:

Laboratory at Oxford, Mississippi, and other facilities for expanded research on sedimentation damage in the Yazoo-Little Tallahatchie watershed	\$600,000
Sewage disposal plant, cattle feeding shed, and residence replacement at the U. S. Range Livestock Experiment Station, Miles City, Montana	145,000
Headquarters laboratory building, including lambing and feeding quarters, for sheep breeding research at the Western Sheep Breeding Laboratory, Dubois, Idaho	250,000
Laboratory for wool processing research at the Western Utilization Research Laboratory, Albany, California	105,000
Laboratory building at U. S. Salinity Laboratory, Riverside, California	<u>100,000</u>
Total, Construction	<u><u>1,200,000</u></u>

Alterations:

Alterations to the U. S. Salinity Laboratory, Riverside, California, for research on soils	<u><u>25,000</u></u>
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Increases are proposed in the estimates for the construction of the five large buildings (\$1,200,000) and for alterations (\$25,000). The need for each of these is discussed in detail in the justifications under the subappropriation "Research".

The seventh change proposes the deletion of the language "by donation, or exchange," from the authority for acquisition of land necessary for the construction of buildings. This language is now unnecessary since section 11 of the Department of Agriculture Organic Act of 1956, Public Law 979, approved August 3, 1956, provides that:

"The Department of Agriculture is authorized to acquire land, or interest therein, by purchase, exchange or otherwise, as may be necessary to carry out its authorized work: PROVIDED, That no acquisition shall be made under this authority unless provision is made therefor in the applicable appropriation or other law."

It is expected that all buildings proposed in the 1958 estimates would be constructed on presently owned Federal land, except in the case of facilities for research on sedimentation damage in the South. It is anticipated that land at Oxford, Mississippi, required for the laboratory for such research, will be donated by the State. However, if a suitable site cannot be obtained by donation or exchange, the necessary land will be purchased. In the case of field installations, such as gauging stations on subwatersheds, it may be necessary to purchase small tracts of land not available by lease or other arrangement.

The ninth change decreases from \$4,400,000 to \$1,000,000 the limitation relating to the amount held in the Contingency Fund for the control of emergency outbreaks of insects and plant diseases. An explanation of this proposed decrease is discussed in detail under the justification of estimates for the appropriation item, "Plant and animal disease and pest control".

The tenth change deletes the nonrecurring provision contained in the 1957 Agricultural Appropriation Act which provided \$1,250,000 to be immediately available in fiscal year 1956 for control of the Medfly. This provision is not necessary in 1958.

The eleventh change authorizes the use of not to exceed \$156,000 for the construction of livestock inspection facilities at four locations along the Canadian border and for the acquisition of the necessary land therefor. The need for these facilities is discussed in detail in the justifications under the subappropriation, "Plant and animal disease and pest control".

The twelfth change deletes the language included in the First Supplemental Appropriation Act, 1957, providing an additional \$2,500,000 in fiscal year 1957 for the control of Medfly. Funds which may be needed for the control of Medfly in fiscal year 1958 are included under the "Plant and animal disease and pest control" subappropriation.

SUPPLEMENTARY PROJECT STATEMENT

(The following schedule reflects a more detailed analysis of the obligations shown in the regular project statement)

Project	1956	1957 (estimated)	1958 (estimated)
RESEARCH:			
<u>Crops Research:</u>			
Field Crops Research:			
(Production, breeding, disease, and quality investigations)			
Cereals	\$1,678,800:	\$1,820,870:	\$1,906,900
Cotton and other fibers ...	787,200:	1,070,480:	1,122,100
Forage	1,469,900:	2,099,840:	2,188,000
Sugar	741,780:	752,530:	786,000
Tobacco	359,322:	468,330:	489,800
Drug, oil, raticide, rubber, insecticide, tannin, flavoring (including hops), and other special product plant investiga- tions	181,420:	286,050:	296,900
Weed control investigations	433,450:	660,660:	688,400
Subtotal	5,651,872:	7,158,760:	7,478,100
Horticultural Crops Research:			
(Production, breeding, dis- ease, and quality investiga- tions)			
Deciduous fruits	516,380:	531,520:	558,500
Citrus, avocado and other subtropical fruits	289,820:	300,840:	314,100
Nuts	330,160:	339,030:	355,300
Vegetables	824,703:	885,620:	923,400
Potatoes	190,960:	190,970:	199,800
Plants for landscaping and ornamental purposes, and farm windbreaks	382,987:	393,620:	413,200
Plant introduction, testing and maintenance of basic stocks	467,140:	1,219,580:	904,900
Investigations to reduce crop damage caused by nematodes	252,380:	330,020:	345,000
Basic studies of plant growth and development ..	160,320:	166,940:	175,000
Research on plant disease epidemics and the identi- fication of disease organisms	138,360:	142,790:	228,000
National Arboretum	367,410:	500,000:	512,500

Project	1956	1957 (estimated)	1958 (estimated)
RESEARCH - Continued			
<u>Crops Research - Continued</u>			
Horticultural Crops Research - Continued			
(Production, breeding, disease, and quality in- vestigations) - Continued			
Construction of Horticul- tural soil and water laboratory in Rio Grande Valley, Texas	- -	325,000:	- -
Subtotal	3,920,620:	5,325,930:	4,929,700
Entomology Research:			
Fruit insects	889,100:	928,700:	974,800
Truck crop and garden insects	520,280:	545,900:	609,700
Cereal and forage insects ...	606,547:	685,330:	738,500
Cotton and other fiber plant insects	479,640:	576,250:	613,500
Beekeeping and insect pathology	311,220:	322,860:	429,400
Insects affecting man and animals	603,530:	722,750:	755,600
Insect identification and parasite introduction	358,943:	391,360:	464,700
Pesticide chemicals	560,770:	660,350:	693,200
Subtotal	4,330,030:	4,833,500:	5,279,400
Total, Crops Research	13,902,522:	17,318,190:	17,687,200
<u>Farm and Land Management Research:</u>			
Soil and Water Conservation Research:			
Investigations in soil and crop management and water management on farms related to crop production:			
Humid regions	905,180:	1,260,540:	1,431,100
Irrigated and dry land regions	1,445,049:	1,996,300:	2,588,800
Soil improvement, plant nu- trition and salinity con- trol investigations	652,760:	842,940:	1,034,600

Project	1956	1957 (estimated)	1958 (estimated)
RESEARCH - Continued			
<u>Farm and Land Management Research - Continued</u>			
Soil and Water Conservation Research - Continued			
Fertilizers and their improvement	344,600:	365,830:	384,400
Investigations of the management of agricultural watersheds for soil and water conservation and the prevention of flood and sediment damage	493,970:	925,500:	1,769,500
Subtotal	3,841,559:	5,391,110:	7,208,400
Agricultural Engineering Research:			
Farm power and machinery investigations	515,442:	626,230:	870,200
Farm structures and related investigations	310,956:	391,330:	408,000
Mechanical preparation and conditioning of farm products	564,294:	580,150:	641,500
Farm electrification investigations	272,895:	382,790:	397,300
Subtotal	1,663,587:	1,980,500:	2,317,000
Production Economics Research:			
Economics of production	1,642,594:	2,526,400:	3,490,800
Total, Farm and Land Management Research	7,147,740:	9,898,010:	13,016,200
<u>Livestock Research:</u>			
Animal and Poultry Husbandry Research:			
(Breeding, feeding, management, and meat quality investigations)			
Swine	422,540:	517,340:	533,400
Sheep and goats	465,550:	543,040:	971,900
Horses and mules	5,000:	5,410:	5,800

Project	1956	1957 (estimated)	1958 (estimated)
RESEARCH - Continued			
<u>Livestock Research - Continued</u>			
Animal and Poultry Husbandry Research - Continued			
(Breeding, feeding, manage- ment, and meat quality investigations) - cont'd.			
Beef and dual-purpose cattle	782,590:	968,650:	1,142,500
Poultry	868,078:	1,208,480:	1,027,400
Fur animals	100,840:	107,180:	111,900
Subtotal	2,644,598:	3,350,100:	3,792,900
Dairy Husbandry Research:			
Dairy cattle breeding, feed- ing and management investi- gations	679,241:	697,840:	749,900
Nutrition and physiology investigations	484,310:	658,800:	684,200
Dairy herd improvement in- vestigations	319,490:	314,360:	463,200
Subtotal	1,483,041:	1,671,000:	1,897,300
Animal Disease and Parasite Research:			
Cattle	962,265:	1,184,060:	1,435,200
Swine	535,284:	580,040:	602,900
Sheep and goats	174,577:	205,420:	251,200
Horses	3,562:	3,770:	3,800
Poultry	460,635:	530,220:	544,200
Fur animals	45,743:	47,940:	50,900
Treatment for parasites	117,934:	137,550:	145,300
Other parasite investigations:	59,452:	60,150:	131,300
Other disease investigations:	116,548:	125,150:	130,100
Subtotal	2,476,000:	2,874,300:	3,294,900
Total, Livestock Research	6,603,639:	7,895,400:	8,985,100
<u>Administration of Payments to States and Territorial Research:</u>			
State Experiment Stations Research:			
Administration of grants and coordination of re- search with States	168,820:	222,200:	268,500

Project	1956	1957 (estimated)	1958 (estimated)
RESEARCH - Continued			
<u>Administration of Payments to States and Territorial Research: Continued</u>			
Territorial Experiment Sta- tions Research:			
Federal experiment sta- tion, Puerto Rico	168,215:	174,150:	180,100
Virgin Islands agricul- tural research and extension program	121,460:	132,190:	135,900
Research on agricultural problems of Alaska	306,180:	312,460:	327,400
Subtotal	595,855:	618,800:	643,400
Total, Administration of Payments to States, and Territorial Research	764,675:	841,000:	911,900
<u>Home Economics Research:</u>			
Human Nutrition Research	704,246:	913,730:	1,156,200
Household Economics Research ..	468,249:	549,370:	575,100
Clothing and Housing Research ..	356,854:	362,200:	433,300
Total, Home Economics Research ..	1,529,349:	1,825,300:	2,164,600
<u>Utilization Research:</u>			
Cereal and forage crops	1,753,103:	2,162,680:	3,037,400
Cotton and other fibers	1,712,027:	2,112,000:	3,086,900
Fruits and vegetables	2,004,476:	2,811,350:	2,303,300
Oilseeds	1,173,022:	1,194,700:	1,514,200
New and special plants	936,852:	1,457,090:	1,528,400
Poultry, dairy, and animal products	1,895,920:	2,456,280:	2,674,800
Total, Utilization Research	9,475,400:	12,194,100:	14,145,000
Above amounts for Utilization Re- search distributed by regions and commodities as follows:			
Northern Utilization Research:			
Corn, wheat, other cereal and forage crops	1,375,554:	1,686,500:	2,537,200
Soybean and other oilseeds	488,791:	506,100:	738,200
Sugar and syrups	18,818:	222,500:	232,800
Subtotal	1,883,163:	2,415,100:	3,508,200

Projects	1956	1957 (estimated)	1958 (estimated)
RESEARCH - Continued			
Utilization Research - Continued			
Above amounts for Utilization Research distributed by regions and commodities as follows: -			
Continued			
Southern Utilization Research:			
Rice	27,229:	52,200:	55,100
Cotton	1,519,121:	1,836,800:	2,293,300
Fruits and vegetables	212,418:	995,200:	244,600
Cottonseed, peanuts and other oilseeds	663,984:	666,000:	752,000
Sugars, syrups, and naval stores	317,602:	474,000:	498,600
Subtotal	2,740,354:	4,024,200:	3,843,600
Eastern Utilization Research:			
Cereal and forage crops ...	20,249:	22,600:	24,000
Fruits and vegetables	463,803:	452,800:	473,700
Oilseeds	20,247:	22,600:	24,000
Sugars, syrups, tobacco, tanning materials and new and special plants	490,927:	560,800:	587,400
Poultry, dairy and animal products	1,541,975:	1,965,400:	2,159,900
Subtotal	2,537,201:	3,024,200:	3,269,000
Western Utilization Research:			
Wheat, rice and forage	330,071:	401,380:	421,100
Wool and mohair	192,906:	275,200:	793,600
Fruits and vegetables	1,328,255:	1,363,350:	1,585,000
Sugars and syrups	109,505:	199,790:	209,600
Poultry products	353,945:	490,880:	514,900
Subtotal	2,314,682:	2,730,600:	3,524,200
Total, Utilization Research	9,475,400:	12,194,100:	14,145,000
Total, Research	39,423,325:	49,972,000:	56,910,000
PLANT AND ANIMAL DISEASE AND PEST CONTROL:			
Plant Disease and Pest Control:			
Plant Pest Control:			
Barberry eradication	658,209:	674,700:	698,900
Citrus blackfly and Mexican fruitfly	358,427:	372,100:	380,600

Project	1956	1957 (estimated)	1958 (estimated)
PLANT AND ANIMAL DISEASE AND PEST CONTROL - Continued			
<u>Plant Disease and Pest Control - Continued</u>			
Plant Pest Control - Continued			
Golden nematode	347,313:	359,300:	372,200
Gypsy moth	908,329:	2,795,200:	2,895,600
Hall scale eradication	85,756:	85,000:	88,000
Insect detection and advisory service	274,106:	303,800:	314,700
Insecticide, Fungicide and Rodenticide Act	609,736:	627,000:	799,200
Japanese beetle	441,229:	449,000:	465,200
Phony peach and peach mosaic	137,566:	145,000:	150,200
Pink bollworm	1,223,381:	1,265,100:	1,310,600
Sweetpotato weevil	217,531:	220,900:	228,800
White-fringed beetle	724,852:	733,200:	759,800
Burrowing nematode	148,885:	500,000:	500,000
European chafer	82,714:	110,000:	110,000
Grasshopper and Mormon cricket:	861,229:	1,017,400:	1,037,800
Khapra beetle	649,747:	905,000:	250,000
Mediterranean fruit fly	96,500:a/	4,675,000:	250,000
Soybean nematode	29,374:	120,000:	120,000
Contingency fund	b/	b/	1,000,000
Total, Plant Pest Control	7,854,884:a/	15,357,700:	11,731,600
Plant Quarantine	3,112,167:	4,087,200:	4,835,000
Total, Plant Disease and Pest Control	10,967,051:	19,444,900:	16,566,600
<u>Animal Disease and Pest Control:</u>			
Animal Disease Control and Eradication:			
Eradicating tuberculosis ..	1,927,492:	2,078,800:	2,172,700
Eradicating brucellosis (Bang's disease)	c/ 3,961,165:c/	3,961,165:c/	4,139,300
Eradicating scabies	202,643:	206,400:	215,700
Eradicating cattle ticks ..	403,558:	409,300:	427,800
Diagnosis, control and eradication of miscel- laneous diseases	187,570:	234,000:	484,500
Supervision over interstate movement of livestock ...	1,024,970:	1,046,735:	1,094,000
Subtotal	7,707,398:	7,936,400:	8,534,000

Project	1956	1957 (Estimated)	1958 (estimated)
PLANT AND ANIMAL DISEASE AND PEST CONTROL - Continued			
<u>Animal Disease and Pest Control - Continued</u>			
Animal Quarantine:			
Import-export inspection and quarantine	842,568:	864,500:	1,068,700
Control of manufacture, im- portation, shipment and marketing of viruses, serums, toxins, etc.	540,979:	548,200:	782,700
Subtotal	1,383,547:	1,412,700:	1,851,400
Total, Animal Disease and Pest Control	9,090,945:	9,349,100:	10,385,400
Total, Plant and Animal Disease and Pest Control	20,057,996:	28,794,000:	26,952,000
MEAT INSPECTION:			
Meat Inspection	15,217,643:	15,650,000:	18,718,000
Unobligated balance	1,025,178:	- -	- -
Total available or estimate	75,724,142:	94,416,000:	102,580,000

a/ Of this amount, \$987,445 was obligated in fiscal year 1956 pursuant to the provision in the 1957 appropriation making \$1,250,000 immediately available for control of the Mediterranean fruit fly in fiscal year 1956.

b/ Amounts available under contingency fund in fiscal years 1956 and 1957 have been reflected under the specific control programs for comparability with the 1958 Budget Estimate.

c/ Excludes advances from the Commodity Credit Corporation, totaling \$16,224,435 in 1956 and estimated at \$20,000,000 in 1957 and 1958 to accelerate the brucellosis eradication program pursuant to Title II of the Agricultural Act of 1954, approved August 28, 1954, as amended.

STATUS OF PROGRAM

The Agricultural Research Service conducts fundamental and applied research relating to the production and utilization of agricultural products, and conducts those control and regulatory programs of the Department which involve enforcement of plant and animal quarantines, the control of diseases and pests of animals and plants, meat inspection, and related work.

It carries out the Department's physical, biological, and economic science research in the fields of crops, farm and land management, livestock, home economics, and utilization.

Research is conducted at the 12,000-acre Agricultural Research Center, Beltsville, Maryland, where many projects of the Agricultural Research Service and other agencies are under way, and at numerous locations in the States, Territories and Possessions, and in foreign countries. A large part of the research is in cooperation with State agricultural experiment stations and other public and private agencies. Research is also conducted under contract with various public and private agencies and institutions.

Plant and animal disease and pest control programs are conducted to prevent introduction into the United States of pests and diseases of foreign origin, to prevent the spread interstate of those within the country, and to control and eradicate them where found. Extensive programs are conducted at numerous locations in all States and Territories, on farms, ranches, sea, air and border ports of entry, public stockyards, establishments licensed under the Virus-Serum-Toxin Act, etc.

Work also includes enforcement of the Federal meat inspection laws which assures production of disease-free, clean, and wholesome meat and meat products for both civilian and military use and for foreign commerce. This is accomplished by supervising slaughtering and meat processing operations at meat packing plants, application of controls over imported meats to assure the same protection as in the case of meats produced domestically, and a system of certification of meats for export to keep foreign markets open to American meats.

CROPS RESEARCH

Current activities: Investigations are conducted on the production and improvement of field and horticultural crops; on the control of crop diseases, nematodes, and weeds; on the control of injurious insects affecting farm production, and on the utilization of beneficial insects; on chemicals, including insecticides, fungicides, nematocides, and herbicides for the control of crop pests, and on the development and testing of new formulations. Plant explorations are made to introduce new plants and strains as new crops or for breeding superior varieties. Work includes operation of the National Arboretum, located in the District of Columbia.

Selected Examples of Recent Progress

Field Crops Research

1. Two new rust-resistant durum wheats (Langdon and Yuma) released. These wheats were developed in cooperation with North Dakota to replace varieties formerly grown that were susceptible to stem rust race 15B. The new varieties appear to be resistant to all known biotypes of 15B. Both produce satisfactory yields of grain of reasonably good test weight and have proved acceptable for the production of semolina. The rust resistance of these two varieties was derived from crosses involving Khapli emmer. Both varieties are about two days earlier than Mindum, formerly an important durum variety. Langdon is slightly shorter and more resistant to lodging than Mindum. Yuma is 6 to 8 inches shorter and equals Mindum in standing ability. Although Langdon is somewhat more susceptible to leaf rust than Mindum, it has shown good yielding ability over a wide range of conditions.
2. Hybrid sorghum promises to become a new major enterprise in American agriculture. There is little question that hybrids will rapidly replace varieties of sorghum now being grown on some 15,000,000 acres. Several hundred acres for hybrid seed production were sown on irrigated land in 1956. With a reasonably favorable crop year, seed will be available for the planting of several million acres in 1957. The speed with which sorghum hybrids have been developed verges on the phenomenal. The character that makes hybrid seed production feasible in sorghum--the use of male sterile lines--was not discovered until 1952. Hybrid sorghum, unlike hybrid corn, is produced without the labor of detasseling.
3. Hot water treatment improves germination of cotton seed. The Pima S-1 cotton seed which have given growers trouble because they are hard and slow to germinate can now be made to germinate rapidly if treated in hot water at 75-85° C. for 1 to 2 minutes. Essentially all the extra long staple Pima S-1 cotton seed planted on about 40,000 acres in 1956 were treated by a process developed by cooperative research in California and perfected through further research in cooperation with industry in Arizona and California. Findings show that (1) only the naturally vigorous and nonhard seed are oversensitive to treatment and even these will be unharmed if the time and temperature of treatment are kept at the minimum required for activation; (2) a wide selection of species, strains and varieties are responsive to treatment; (3) treated seed may be redried and stored for over a year without loss in benefit; and (4) germination under saline conditions is improved by treatment and improvement is increasingly evident when comparisons of treated and nontreated seed are made at low soil temperatures.

4. Lahontan alfalfa proves highly resistant to spotted alfalfa aphid. Lahontan, a new alfalfa variety resistant to bacterial wilt and stem nematode, released in 1954, has proved highly resistant also to the spotted alfalfa aphid. In numerous new seedings of alfalfa made in the southwestern United States since the aphid outbreak in 1954, Lahontan has become successfully established and produced good forage yields under heavy infestations of this insect where other varieties have failed completely in both new and established stands. Seed of Lahontan is being increased as rapidly as possible to fulfill farmer demands for this alfalfa as a stopgap variety for control of the aphid, which currently infests more than 7,000,000 acres, or about one-third of the total alfalfa acreage in this country. Three of the five parent plants of Lahontan which approach immunity to this pest are being used by plant breeders throughout the country as source material to incorporate aphid resistance into types and varieties which are otherwise superior in those regions where Lahontan is of questionable adaptation because of its susceptibility to certain stem and foliage diseases.
5. Fall infection of red clover by northern anthracnose causes reduction in yield and quality of hay. Disease studies of red clover conducted in cooperation with the Wisconsin Agricultural Experiment Station indicate why the northern anthracnose disease fluctuates in severity from year to year. Fall inoculation of first year plants produced heavy infections in the spring and summer of the second year where spring inoculations have varied in effectiveness. Yields were reduced as much as one ton per acre and the feeding value of the hay was low. The organism causing the disease lives over the winter in the stems and leaves either on the surface or in the soil and inoculates the new growth. Third year red clover was more heavily infected than first or second year stands. The variety Dollard has some resistance to northern anthracnose. A new variety highly resistant is being widely tested before release.
6. Monogerm seed gives promise of complete mechanization of sugar-beet production. Satisfactory machines have been available for several years for harvesting sugar beets. However, the multiple-seed characteristic of the beet, which causes 1 to 6 plants to grow in a clump, has prevented mechanized thinning and thus delayed complete mechanization of this crop. Productive single-germ hybrids have now been developed which will give a stand of plants along the row, spaced as required for machine weeding and thinning. This has been hailed as one of the most important advances in sugar-beet improvement. The new monogerm-seed type is being bred into all of the productive, disease-resistant, and locally adapted varieties. Thus, through breeding research, the sugar-beet plant is being fashioned to meet the requirements of mechanized agriculture.

7. Multiple disease resistance found in wild relative of commercial tobacco. Recent experimental disease screening and breeding trials indicate that the species *Nicotiana glauca*, a wild relative of commercial tobacco, possesses factors for resistance to five of the important diseases causing heavy losses in the various tobacco producing areas. It is resistant to blue mold, root knot, root rot, black shank, and freckling. Successful crosses have been made between *N. glauca* and a variety of burley tobacco. The progeny therefrom are being evaluated for resistance to a combination of the five diseases. This wild relative of tobacco may provide an ideal source for multiple disease resistance in the varietal improvement program.
8. Non-shattering sesame varieties adapted to machine harvesting. Laboratory trials and field tests of sesame, completed in the Federal-State cooperative varietal improvement program in Texas, indicated that most commercial combines can easily be modified or adjusted to thresh non-shattering sesame varieties without excessive damage to the seed. These trials showed that (1) peripheral cylinder speeds of less than 33,000 inches per minute are required to obtain threshed seed germinating 80 percent or more; (2) 95-98 percent combine efficiency was obtained at peripheral speeds as low as 23,750 inches per minute when adequate threshing surface was provided, and all unthreshed capsules were returned to the cylinder for re-threshing; and (3) the advantage of reduced cylinder speed in preventing seed damage was lost if threshed seed was returned to the cylinder with the tailings.
9. Broadleaf weeds controlled in legumes and other crops. One of the most difficult weed problems is the control of these crop pests in more than 35 million acres of land planted to wheat and other small grains underseeded with legumes such as alfalfa, clovers, and lespedezas. Two new phenoxybutyric acids, closely related to 2,4-D, were found to be highly selective herbicides in such situations and less toxic to the grain and legume crops than 2,4-D. The new herbicides, applied as post-emergence sprays, gave good control of lambsquarters, pigweed, ragweed, smartweed, mustard, Canada thistle, and other broadleaved weeds in various weed-crop situations, including (a) cereals underseeded with certain forage legumes, (b) the establishment of weed-free new plantings of small seeded forage crops, (c) legume-grass pastures, (d) forage legume seed production fields, (e) flax, and (f) corn, wheat, oats, sorghum, and rice grown in the vicinity of crops such as cotton and grapes which are highly susceptible to phenoxyacetic acids, such as 2,4-D. Department and industry chemists are cooperating extensively with the weed scientists to develop new chemicals with improved selectivity for the control of broad-leaved weeds in legumes and other crops.

Horticultural Crops Research

10. Chelated iron corrects chlorosis of pears in Oregon. In certain soils in Oregon and other Western States, pears and other fruit trees become chlorotic. The foliage is light green or white instead of dark green, trees make little growth, and are largely nonproductive. These chlorotic effects are caused basically by lack of available or soluble iron in the tree. Experiments were initiated in Oregon in 1954 to test the value of chelated iron (iron combined with organic materials that cause it to remain soluble) in correcting chlorosis. Trees sprayed twice in the early summer of 1954 greened up almost completely and set a heavy crop of fruit in 1955. Injecting solutions of chelated iron into the soil in 1954 did not cause greening that year but treated trees came out green in 1955. Treatments with chelated iron to correct chlorosis of pears and to return such trees to productive condition are now being used generally by growers.
11. New vegetable varieties introduced. Y. R. Charleston Wakefield, a new cabbage variety developed and released jointly by the Department and the Wisconsin Agricultural Experiment Station, is highly resistant to yellows. It conforms in all essential characteristics, including yield, to standard commercial stocks of nonresistant Charleston Wakefield. It is believed that it can be used to replace the latter variety in commercial production. Seed was available to growers in November 1955.

The first hybrid spinach, Early Hybrid 7, has been released for commercial planting by the Department in cooperation with the Texas Agricultural Experiment Station. This hybrid is very resistant to blue mold and blight, two of its most damaging diseases, although a few plants may be infected when these diseases are epidemic. Early Hybrid 7 grows rapidly, makes a heavy crop in a short time, and is well adapted to machine harvesting. It is intended for planting the fall and winter crop in the South. Although chiefly for canning and freezing, it has been used for fresh shipment by some growers.

Two multiple-resistant potato varieties for the South--Boone and Plymouth--resistant to a number of diseases, have been released jointly by the Department and the North Carolina Agricultural Experiment Station. Boone shows promise in the western part of North Carolina. It produces better average yields than Kennebec or Sequoia, the 2 standard varieties; is similar to them in dry-matter content; and is highly resistant to the common race of the late blight fungus, non-parasitic internal tuber necrosis, and tuber necrosis due to current season leaf roll infection. Plymouth is promising in the tidewater area of North Carolina and appears to be superior to the standard varieties Irish Cobbler and Sebago for several characters. It is immune to the common race of the late blight fungus, and is resistant to common scab and corky ring spot. It also has shallow eyes and high dry-matter content.

12. International exchange of experimental plant stocks continued. Through direct exploration and official correspondence, approximately 7,900 seed and plant collections were introduced during 1955 for the use of domestic research workers. A major portion of this material came from Iran and Japan where explorers were particularly seeking forage crops, small grain cereals, vegetables, and ornamentals. Plant stocks sent abroad for immediate experimental use and to encourage future exchange included around 63,000 items for 119 countries or territories. Supplies of seed were also furnished to various technical missions operating under the International Cooperation Administration.
13. Samples of yam (Dioscorea) for cortisone and other hormones collected. Twenty-six exceptionally valuable samples of Dioscorea were collected in southern Mexico. Of these, 19 yielded 3 percent or better of diosgenin, the precursor of cortisone; and among this number were 9 that yielded 5 percent or more diosgenin, the highest being 6.5 percent. A plant yielding 3 percent or better is considered of practical use in the agricultural production of cortisone. These collections are being increased for field testing. At present, the Department has selected about 30 of the more than 300 Dioscorea samples collected which have analyzed 3 percent or more diosgenin.
14. Nematode control by soil fumigation increases farm income. In the past ten years, expenditures by farmers for soil fumigants used to control nematodes have increased from less than \$100,000 to over \$12,000,000 annually. The greater part of this increase has taken place in the past 5 years. All of the pineapples produced commercially in Hawaii are grown on fumigated soil. In 1956, more than half of the tobacco acreage will be fumigated. Use of fumigants on soil to be planted to vegetables is rapidly increasing. Farmers have found that soil fumigants often increase the value of crops 4 to 10 times the cost of the fumigant and its application.
15. Recent progress at U. S. National Arboretum. Plans, grading studies and specifications have been prepared under supervision of the Bureau of Public Roads for the grading and final surfacing of 4-1/2 miles of roads in conformity with the master plan drawn by the Public Buildings Administration. Grading and gravel surfacing is proceeding according to contract, which has included construction of one box culvert over Hickey Creek, already completed.

Necessary extensions of the arboretum water system have been undertaken with the laying of 1,600 feet of 4" mains and 2,600 feet of 1" feeder lines to supply water to newly planted areas. Nine hundred feet of 4" tile have been laid to alleviate poor drainage conditions.

Plant collections have been increased by approximately 1,200 accessions representing 80 genera acquired as gifts or by purchase. These accessions have included 600 Camellia japonica in 171 clones, nearly complete collections of Yerkes, Pericat, Merritt, Ghent and Mollis azaleas, 25 hybrid poplars, and a wide range of miscellaneous woody-plant materials.

Approximately 3,000 plants have been added to the permanent plantings, particularly in the Cryptomeria Valley and Holly areas. Elsewhere, 123 crabapples were placed to form the nucleus of a new collection facing on Bladensburg Road; 130 hybrid rhododendrons were planted below the azalea area and adjoining Beech Spring Pond; and dwarf rhododendrons and plants of Calluna and Erica have started a new site for this class of material.

A research program directed toward the improvement of ornamental and economic woody plant stocks has received marked impetus during the past year. Initial work has been in connection with four well represented plant groups - hollies, magnolias, rhododendrons, and azaleas. Necessary background data have been secured on the limits of effective inter-specific pollination in hollies. One hundred and five crosses have been made among 15 species of holly and 40 crosses among 12 species of magnolia. Investigations on seed and cutting propagation are in progress within these groups.

Entomology Research

16. Research helps in Mediterranean fruit fly program in Florida.
The value of research to survey and control programs was brought into sharp focus when the Mediterranean fruit fly eradication effort in Florida was initiated. Nearly all of the procedures adopted for conducting the program are the result of recent research on fruit flies in Hawaii and Mexico. Research had determined the usefulness of oil of angelica seed and ammoniated protein hydrolysate baits for survey, the malathion-protein hydrolysate bait spray and soil treatments for control, and the ethylene dibromide fumigation and other treatments to permit movement of host products under quarantine safeguards. Meanwhile readjustments have been made in the fruit fly research program to meet other needs of the control program, particularly for improved and less costly control methods.
17. Parasites introduced to combat the spotted alfalfa aphid.
Explorations for natural enemies of the spotted alfalfa aphid have been made in Europe, North Africa, the Near East, and India, and three species of parasites have been introduced into the United States. Breeding methods have been developed whereby these three parasites are being reared in large numbers in the laboratory for colonization. Releases of the three species have

been made in fields infested with this aphid in Arizona, California, Kansas, Missouri, New Mexico, Oklahoma, Texas, and Utah. Parasite recoveries have been made in Arizona, California, and Oklahoma which show initial establishment.

18. Peach mosaic vector determined. After 17 years of searching, an unnamed mite discovered in the bud scales of peach trees in California in April 1955 has been found to be a carrier of the peach mosaic virus. This mite is so small that it cannot be seen without being magnified at least 20 times. It has been found on certain varieties of American plums in Georgia and Mississippi as well as in mosaic-spread areas in Arizona, New Mexico, Colorado, and California. Transmission was first obtained through transfers of 5 to 50 mites per tree, but a single mite has since transmitted the virus to a small peach tree. Preliminary tests of insecticides indicate that control may be feasible with such materials as sulfur or demeton. If so, it is entirely possible that the incidence of infection of the disease can be reduced to the point where it will no longer be a serious problem.
19. Boll weevil resistance to insecticides constitutes a threat to cotton production. During 1955 farmers in several areas in Louisiana, in the South Delta area of Mississippi, and in a small section of Southeastern Arkansas failed to control the boll weevil with the recommended chlorinated hydrocarbon insecticides, despite the fact that in many cases they doubled or trebled the dosage and reduced the interval between applications from 5 to 2 or 3 days. Research showed that boll weevils from these areas had developed a high degree of resistance to the chlorinated hydrocarbon insecticides. This situation could have a terrific impact on cotton production. A new phosphorus insecticide, Bayer 17147, is an extremely promising substitute for control of boll weevils resistant to the recommended chlorinated hydrocarbons. Research is under way to determine if this new material can be used to control cotton insects without causing excessive residues in cotton seed products used for human food and animal feed.
20. Establishment of predaceous wasps in tobacco fields reduced damage by hornworms. Hornworms are one of the most serious pests of tobacco. Cooperative experiments in North Carolina have shown that in tobacco fields where artificial shelters were installed for the use of predaceous wasps, the potential damage by hornworms was substantially reduced as a result of the beneficial activities of these natural enemies. In the fields where the wasp shelters were used, the number of hornworms was reduced 58 percent, and their damage 48 percent, in comparison with check fields. The experiment suggests that the use of artificial shelters in tobacco fields to attract and protect predaceous wasps may provide a practical and inexpensive means of effecting reductions in damage caused by hornworms.

21. Outstanding insect repellent discovered. N, N-diethyl-m-toluamide has been found to be an outstanding repellent for many species of arthropods attacking man. It is highly effective against mosquitoes, stable flies, deer flies, ticks, fleas, and chiggers. When applied to the skin the period of protection against mosquitoes ranges from 2-8 hours which is longer than any previously developed insect repellent. Pharmacological studies conducted by the Army Environmental Health Laboratory to evaluate possible hazards in its use appear promising. Several manufacturers have shown interest in the commercial development of this repellent.

FARM AND LAND MANAGEMENT RESEARCH

Current activities: Soil and water conservation research is conducted to develop new or improved soil and crop management practices, especially as related to conservation of soil and water resources; to improve irrigation and drainage methods, and to reduce soil-salinity problems; to develop information on watershed hydrology, the sedimentation of streams and reservoirs, the design and hydraulics of structures, and the engineering phases of irrigation and drainage; to improve fertilizers and liming materials; and to determine the relation of soils to plant, animal, and human nutrition.

Agricultural engineering research is aimed at the mechanization of crop production; development of better types of farm buildings, including farm houses and equipment for livestock and for on-farm handling, storing, and conditioning of farm commodities; and development of new farm uses for electric energy and the adaptation of electrical equipment to farm use.

Production economics research is conducted on profitable adjustments in farming by type and size of farm; relation of these adjustments to costs and returns and to total farm output of different products; efficiency in use of labor, equipment, land, and water; profitableness of new and improved farming techniques; inventory and analysis of land resources; and problems of farm valuation, taxation, debt, tenure, risk, and insurance.

Selected Examples of Recent Progress

Soil and Water Conservation Research

1. National soil and water loss data being analyzed. A nationwide summary and analysis of measurements of soil and water losses is underway. All data accumulated from the start of the Soil Erosion Experiment Stations are included. Data from 7,182 plot-years of runoff and soil loss records have already been tabulated, which include information on each plot by physical characteristics, management systems, and types of measurements, as well as a record of soil and water losses, rainfall, and

other characteristics of each storm, and all information relative to the rainfall record at a given plot site. When completed, the findings may be extended to any location where conditions are similar.

The processing, analysis and publication of hydrologic records, which have been accumulated over the past 20 or more years from 366 agricultural watersheds at 60 locations in 27 States, are well under way. Compilation of data has been completed for 150 watersheds, and the results are ready for publication. These results, which include data on runoff, infiltration rates, etc., for different types of surface treatments, will be useful in designing treatments for other watersheds and will have wide application in the program of the Soil Conservation Service, especially in watershed-protection activities.

2. Climatological data interpreted to determine irrigation requirements. The use of climatological data for determining irrigation requirements has been studied in detail in North Carolina. A summary of the frequencies and intensities of droughts based on 25 years of weather data for 70 stations in the State has been completed, and a bulletin published. This information will be of great value in predicting need for irrigation at various locations in the State and the amounts of water likely to be required. Similar studies are underway in other States. The work is nearing completion for Virginia, South Carolina, and Georgia.
3. Sedimentation research shows high flood and sediment damages in Mississippi. Continued studies on the rates of erosion and sources of sediment in the Yazoo-Little Tallahatchie watersheds, as well as on the behavior of sandbed streams in Mississippi, show that widespread damage and losses of land by bank erosion are occurring along the flood plains. For instance, along Big Sand Creek, which is a typical "bluff line" stream, good bottom land adjacent to the creek was being lost at an average rate of nearly an acre per year per channel mile. The average annual loss of bank material from approximately 16 miles of the stream was 422,000 cubic yards. The resulting sediment caused downstream damage by deposition in the Yazoo delta.
4. Grassed waterway resists prolonged flooding. Immediately following an interplanting of Reed's canary grass in an established Bermuda grass waterway in Oklahoma, a flow was maintained for a period of 72 days to determine the hydraulic characteristics and to test the effect of prolonged wetting, such as that which results when channels are used to drain surplus irrigation water or flood flows. The grass mixture thrived despite a continuous flow about one inch deep. When subsequently tested under flood conditions, these grasses withstood velocities in excess of 8 feet per second and remained in excellent condition.

5. Parallel terraces save time and money. Comparative time studies of machine operations on parallel-terraced (terraces with uniform spacing between terraces which eliminates point or turn rows) and standard-terraced areas (terraces which vary in spacing between terraces and therefore have point or turn rows) at McCredie, Missouri, show savings from the parallel terraces. Approximately 20 percent more tractor time was required in 1955 to produce one acre of corn on areas with standard terraces than on similar areas with parallel terraces. Due to an excessive amount of lodging that year it was necessary to operate the corn picker in only one direction. The difference in favor of parallel terraces would probably be greater if the corn picker could have been operated in two directions. The time saved by the parallel terraces was evaluated at \$3.00 per acre under current operation conditions. The cost of converting the standard terrace system to a parallel system at McCredie was \$21.00 per acre. Thus, the outlay for conversion under similar conditions could be recovered in 7 years from decreased production cost.
6. Canal linings reduce seepage losses. Research in cooperation with the Utah State Agricultural College and manufacturers of canal lining materials and soil stabilizers shows that seepage losses in canals can be greatly reduced. Field installations of buried plastic membranes carried on at Eden Valley, Wyoming, have reduced seepage losses to less than 1 percent of former losses. Similar tests in the same area using soil stabilizers (soil-cement mixtures) reduced seepage losses to about 6 percent of former amounts. Irrigation reservoirs lined with both buried and exposed plastic films have shown that a significant saving in water can be made. Rot tests on buried membranes reveal that the plastic types appear to be superior to asphaltic membranes. The buried films are more efficient and less susceptible to physical damage. A field test using exposed plastic film to line a catchment basin in an arid rangeland area was not successful.
7. Kinds of stubble and tillage affect wind erosion damage. Wheat stubble was found to be far more effective for reducing erosion of soil by wind in the Southern High Plains than equal height and amount of sorghum stubble. Standing stubble was also found to be appreciably more effective than stubble flattened, as by a one-way disc. A comparison of types of cover indicated the following order of effectiveness: standing wheat stubble, flattened wheat stubble, standing sorghum stubble, flattened sorghum stubble. This rating does not take into account the effect of differences in the amount of residue that may be available from these crops.

In emergency tillage studies in central Kansas, chiseling at a speed of approximately 4 mph and at a depth of 3 inches on a heavy silt loan soil, or about 5 inches on a coarser textured silt loan soil, produced the most wind-resistant surface.

Speeds in excess of 4 mph tended to pulverize the soil, while speeds slower than 2 mph did not give sufficient upheaval of cloddy material to produce a wind-resistant surface. Close chisel spacing (15 inches) caused dragging of trash, which resulted in some pulverization of clods. Medium (27-inch) spacing was more effective than wider (54-inch) spacing of chisels. However, the wider spacing did not bury as much vegetation as closer spacing and therefore would be recommended in mild cases of wind erosion where there is a chance of saving a wheat crop.

8. Method of using ammonium nitrate in mixed fertilizers developed. Ammonium nitrate is a desirable fertilizer material because of its ready availability, low cost, and high nitrogen content (35 percent). Use of the nitrate in mixed fertilizers has been seriously hampered, however, owing to its marked tendency to absorb moisture from the atmosphere and thus impart poor physical condition to the mixed fertilizer. Studies of the factors influencing the behavior of mixtures containing ammonium nitrate have shown that its adverse effects can be overcome by granulating the products, reducing their moisture content to a low level, adding a small quantity of an anticaking agent, and packing in moisture-resistant bags. In this way, large proportions of ammonium nitrate can be used in making high-analysis mixed fertilizers which do not harden during storage and which can be applied easily and efficiently in the field.

Agricultural Engineering Research

9. Costs of packaging and handling apples reduced. A method using three specialized teams to pick apples has been developed in a cooperative project with the Michigan Agricultural Experiment Station. This method increases the average rate at which apples can be picked because each crew does a specialized job with equipment that is suited to its work. A ground crew picks all apples that can be reached from the ground without ladders. This crew is followed by a mid-section crew using light step ladders or other equipment which enables them to pick the fruit that remains in the tree below a height of about 14 feet. A third crew follows using ladders of sufficient length, or other equipment, to enable them to reach all of the fruit remaining in the tops of the trees. This specialization by crews makes possible an increase in average picking rate of about one bushel per hour per worker, results in less bruising of apples, and requires less picking equipment.

Based on successful results from another phase of this project, a practice of handling apples in bulk boxes having a capacity of 16 to 20 bushels, with fork-lift equipment, is rapidly coming into use in Michigan. Bulk boxes were developed primarily for handling windfall, cull, and processing apples, but are now being adapted for use on fresh market fruit. The method reduces labor cost in the orchard about 2.7 cents per bushel. Further, the first cost of a bulk box is less than the first cost of a pallet plus the number of field crates required to handle the same amount of fruit.

10. Air flow requirements established for drying grains in the Southeast. Minimum rates of airflow for drying oats and grain sorghum with unheated air have been reasonably well established for use in Southeastern States under good weather conditions. Oats at 15 percent initial moisture were dried successfully at an air rate of 1.5 cubic feet per minute per bushel, and grain sorghums at 21 percent moisture content were dried safely with 2 cubic feet of air per minute per bushel.
11. Plastic covers for horizontal silos reduce spoilage. Experiments with bunker and stack silos show that plastic covers can be used to reduce or eliminate top spoilage on horizontal silos. A neoprene coated nylon fabric cover used on two bunker silos saved an average of five pounds of dry matter per square foot of surface when compared with the same silos uncovered or with covers that did not completely exclude air. Vinyl plastics and polyethylene plastics also have been tested. These tests show that plastic covers are adequate but must be well sealed, have no breaks, and should be weighted on top with sawdust, chopped weeds, forage, earth, or other material to prevent billowing due to wind.
12. Substitute developed for digger blade on a potato harvester. A 7/8-inch square rotating rod, similar to those used on machines known as rod weeders, has been successfully used at the Red River Valley Potato Research Center. The advantages of the square rod for digging potatoes are that it is relatively trouble-free during operation and greatly reduces the spill-out of potatoes frequently experienced with digger blades. The rod-equipped machine may be used for either direct digging or for picking up potatoes previously dug and windrowed. Results of tests with this bladeless digger have aroused the interest of growers, and some machinery manufacturers are including this development in experimental machines.
13. New farm building plans developed. At the request of Southern States, about 26 plans were completed for several types of farm buildings during 1955. The majority of these were for sheep and hog structures and equipment. A catalog, Agricultural Handbook No. 90, Sheep Shelters and Equipment for Southern States, was published to enable farmers to select plans which are available through their county agents or the State extension services. A similar catalog illustrating farmhouse plans was completed and is in press, and another for hog houses and equipment is nearing completion.

Production Economics Research

14. Net farm incomes slightly lower in 1955 than in 1954. Although the general level of incomes per farm in 1955 continued below the 1947-49 level, net returns varied considerably by type, size, and location of farm. They were higher in 1955 than in

1954 on 12 of 27 types of commercial family-operated farms; about the same on 4 types; and were lower on 11 (Table I). The changes in net income from 1954 to 1955 were relatively large. They ranged from an increase of around \$7,400 on large-scale Delta cotton farms to a decrease of \$6,100 on wheat-pea farms in Washington and Idaho (Fig. 1).

Changes in net incomes were largely the result of changes in crop yields and prices. In 1955 crop yields were higher than in 1954 on 19 types of farms and lower on 8. Prices received for products sold averaged lower on 23 types, the same on 1, and higher on 3 types of farms. Over the years, efficiency (production per unit of input), crop yields, and net farm production have increased. They were higher in 1951-55 compared with 1937-41 on all farm types studied except on nonirrigated cotton farms in the High Plains of Texas (Fig. 2).

Preliminary estimates of prospective net returns for four of these types of farms for 1956 indicate the following changes in net incomes from 1955 and 1954; on dairy farms in the Central Northeast, down 1 percent from 1955 but up 18 percent from 1954; on hog-dairy farms in the Corn Belt, up 4 percent from 1955 but down 32 percent from 1954; on cotton farms in the Southern Piedmont, down 34 percent from 1955 but up 2 percent from 1954; and on winter wheat farms in the Southern Plains, down 9 percent from 1955 and down 34 percent from 1954.

15. Farm real estate values continued to advance in 1956. During the year ended July 1956, the average value of farmland increased in all except 6 States, most of which were in the Northern Plains and Mountain regions. Changes ranged from a 5-percent decline in Colorado to a 15 percent increase in Florida (Fig. 3). New record highs were established in 29 States as of mid-1956.

The national index advanced to 140 (1947-49-100), 3 percent above a year earlier. The total market value of all farm real estate as of March 1, 1956 was estimated at \$102.7 billion, a record high and \$3.9 billion above a year earlier. The value of buildings represented 23.3 percent of the value of farm real estate, or \$23.9 billion.

The volume of farm sales increased for the second year during the 12 months ended March 15, 1956. The rate of voluntary sales was 4 percent higher than the preceding year. Moderate increases were also reported for foreclosures, tax sales and sales in settlement of estates, but the number of distress transfers was still low compared with the number in the 1930's and early 1940's.

TABLE I

Net farm income, commercial family-operated farms by type,
size and location, 1955 with comparisons

Type of farm and location	Average		1952	1953	1954	1955 1/
	1937-41	1947-49				
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Dairy farms:						
Central Northeast	960	3,892	3,956	3,493	3,735	4,433
Eastern Wisconsin	1,469	4,365	4,585	3,760	3,219	2,839
Western Wisconsin	1,236	3,284	3,825	3,159	2,382	2,404
Corn Belt farms:						
Hog-dairy	1,612	5,639	6,211	6,027	6,379	4,189
Hog-beef raising	928	3,370	4,457	3,357	2,945	2,986
Hog-beef fattening ...	2,520	10,665	8,787	7,055	8,833	3,862
Cash grain	2,627	8,930	9,248	7,471	8,393	6,367
Tobacco farms:						
Tobacco-livestock (Ky.):	1,192	3,334	3,976	3,457	3,439	2,850
Tobacco-cotton (N.C.) :	2/	3,208	3,238	3,240	2,927	3,289
Tobacco farms (small) N.C.:	2/	2,354	2,391	2,611	2,380	2,706
Tobacco-cotton farms (large) N.C.	2/	3,923	3,968	4,042	3,326	4,037
Cotton farms:						
Southern Piedmont	495	1,565	2,129	1,918	1,438	2,240
Black Prairie, Texas .	1,019	3,090	3,017	3,695	1,894	2,972
High Plains, Tex. (Non irrigated)	1,675	6,411	2,188	-640	4,206	2,714
High Plains, Tex. (Irri- gated)	2/	10,761	12,583	8,448	13,205	8,592
Delta:						
Small	2/	1,923	1,963	2,073	1,581	2,070
Large-scale	2/	20,465	24,948	24,668	16,943	24,353
Spring wheat farms (No. Plains):						
Wheat-small grain-live- stock	872	6,323	3,702	4,075	2,263	5,800
Wheat-corn-livestock .	1,127	5,972	2,782	4,302	3,429	2,318
Wheat-roughage-livestock:	533	5,370	2,355	4,755	2,894	4,119
Winter wheat farms:						
Southern Plains	1,174	10,017	14,502	4,961	7,330	5,112
Wheat-pea (Wash. and Idaho)	2,764	11,864	14,210	14,705	16,515	10,412
Sheep ranches:						
Northern Plains	2,734	6,908	5,890	5,287	4,299	4,186
Southwest	2/	5,224	1,292	772	955	3,303
Cattle ranches:						
Northern Plains	980	6,466	5,942	4,216	3,625	2,544
Intermountain region .	2,892	8,665	10,984	5,324	4,481	4,518
Southwest	2/	5,698	1,134	-490	323	3,121

1/ Preliminary

2/ Not available



1955 Compared With 1954

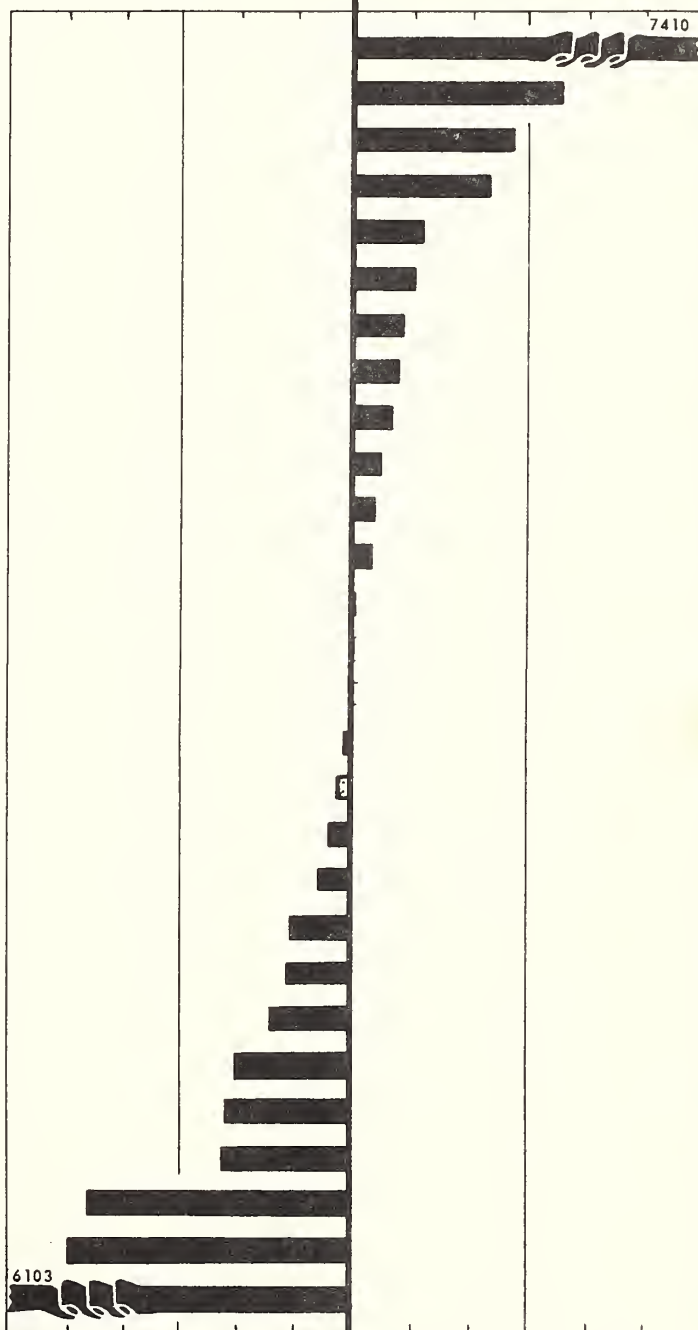
NET FARM INCOME

TYPE OF FARM
↓

\$ CHANGE (THOUS.)

-6 -3 0 3 6

COTTON, DELTA (LARGE SCALE)
WHEAT-SMALL GRAIN-LIVESTOCK, N. PLAINS
CATTLE RANCHES, SOUTHWEST
SHEEP RANCHES, SOUTHWEST
WHEAT-ROUGHAGE-LIVESTOCK, N. PLAINS
COTTON BLACK PRAIRIE, TEXAS
COTTON, SOUTHERN PIEDMONT
TOBACCO-COTTON, N. CAROLINA (LARGE)
DAIRY, CENTRAL NORTHEAST
COTTON, DELTA (SMALL)
TOBACCO-COTTON, N. CAROLINA (AREA)
TOBACCO, N. CAROLINA (SMALL)
HOG-BEEF RAISING, CORN BELT
CATTLE RANCHES, INTERMOUNTAIN
DAIRY, WESTERN WISCONSIN
SHEEP RANCHES, N. PLAINS
ALL FARMS, U. S.
DAIRY EASTERN WISCONSIN
TOBACCO-LIVESTOCK, KY.
CATTLE RANCHES, N. PLAINS
WHEAT-CORN-LIVESTOCK, N. PLAINS
COTTON, HIGH PLAINS, TEXAS*
CASH GRAIN, CORN BELT
HOG-DAIRY, CORN BELT
WINTER WHEAT, S. PLAINS
COTTON HIGH PLAINS^o
HOG-BEEF FATTENING, CORN BELT
WHEAT-PEA, WASHINGTON-IDAHO



*NON-IRRIGATED

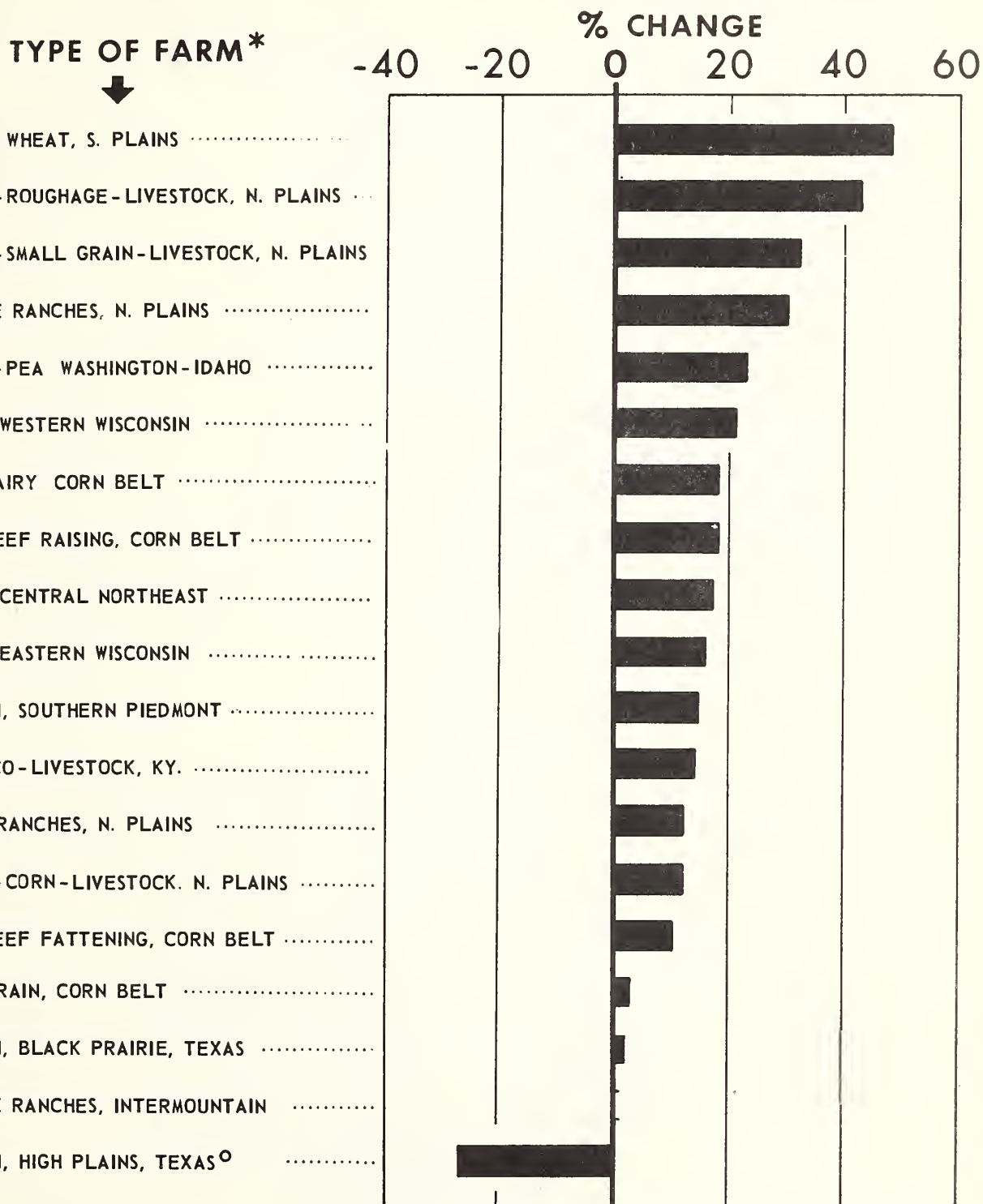
^oIRRIGATED

FIGURE 1



1951-55 Compared With 1937-41

PRODUCTION PER UNIT OF INPUT



* COMMERCIAL FAMILY-OPERATED FARMS

^o NON-IRRIGATED

FIGURE 2

CHANGES IN DOLLAR VALUE OF FARMLAND*

Percentages, July 1955 to July 1956

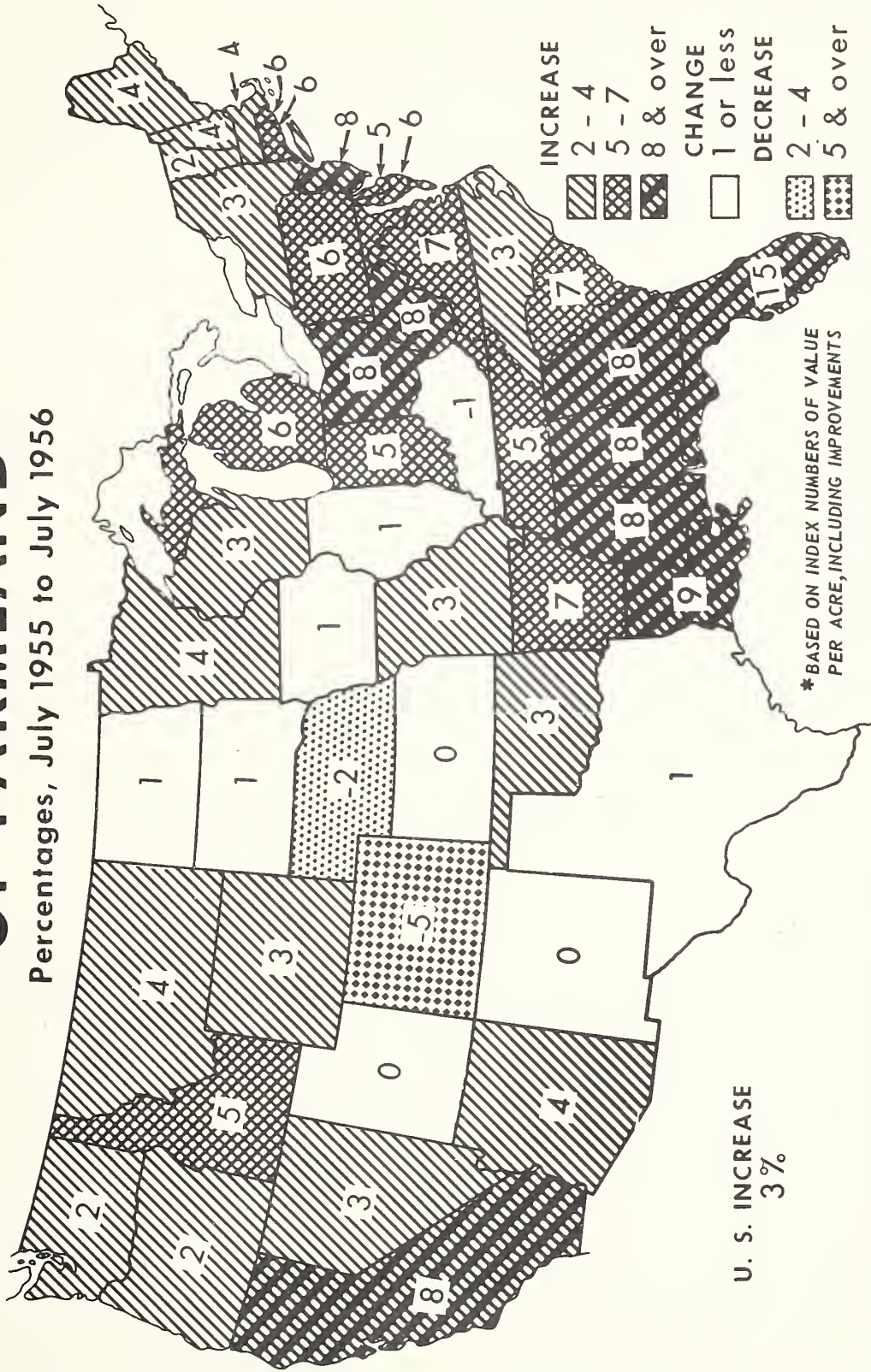


FIGURE 3

Farmers continued to be the most important single group of buyers of farm real estate in the 1955-56 season as they bought nearly 65 percent of all farms sold. (Fig. 4). A substantial proportion of these was bought to enlarge existing farms. Although sales by active farmers declined slightly in all regions, they accounted for 50 percent or more of all transfers in States outside the Corn Belt and Northern Plains. Nonfarmers sold about the same proportion of all farms - 14 percent - as in the previous year, but their purchases increased from 33 percent of the total in 1954-55 to 36 percent in 1955-56.

More credit was used to finance farm purchases in the winter and early spring of 1955-56 than in any similar recent period (Fig. 5). This was due to an increase in the proportion of sales that were credit-financed, as well as to an increase in the ratio of debt to purchase price. Nationally, 67 percent of all farm purchases were financed with some form of credit during the 1955-56 season, compared with 64 percent in the previous season. The average debt incurred on credit-financed purchases was 61 percent of the purchase prices, an increase of 2 percentage points from the level for the season ended March 1, 1955.

16. Farm-mortgages and short-term debt higher. Total farm-mortgage debt increased in 1955 for the tenth consecutive year. On January 1, 1956 it totaled \$9.0 billion, nearly 10 percent above the previous year (Fig. 6). This is the highest figure since January 1, 1932, and is 88 percent above the postwar low in 1946. Farm-mortgage debt continued to rise in 1956, and will probably total about \$9.8 billion on January 1, 1957. Nonreal-estate farm debt (excluding price-support loans) also moved upward to \$7.9 billion on January 1, 1956. This was 8 percent above a year earlier and about 2-3/4 times as large as at the beginning of 1946. Total farm debts, including price-support loans of the Commodity Credit Corporation, rose nearly a billion dollars in 1955, from \$18.0 billion to \$18.8 billion.
17. Farm taxes up sharply. Analysis of the preliminary survey of 1956 tax levies on farm real estate, payable largely in 1957, shows the average taxes per acre to be about 5.6 percent higher than a year earlier (Fig. 7). This is the 14th consecutive year of increases and the average tax per acre will reach an all-time high. Compared with the base period (1909-13=100) the index will be about 145. For 1956, taxes levied on real estate and personal property will total about \$979 million and \$225 million, respectively.

Farm personal property taxes levied in 1956, payable largely in 1957, will be about 3 percent higher than a year earlier. This increase is due mainly to higher tax rates caused by highway and educational expenditures.

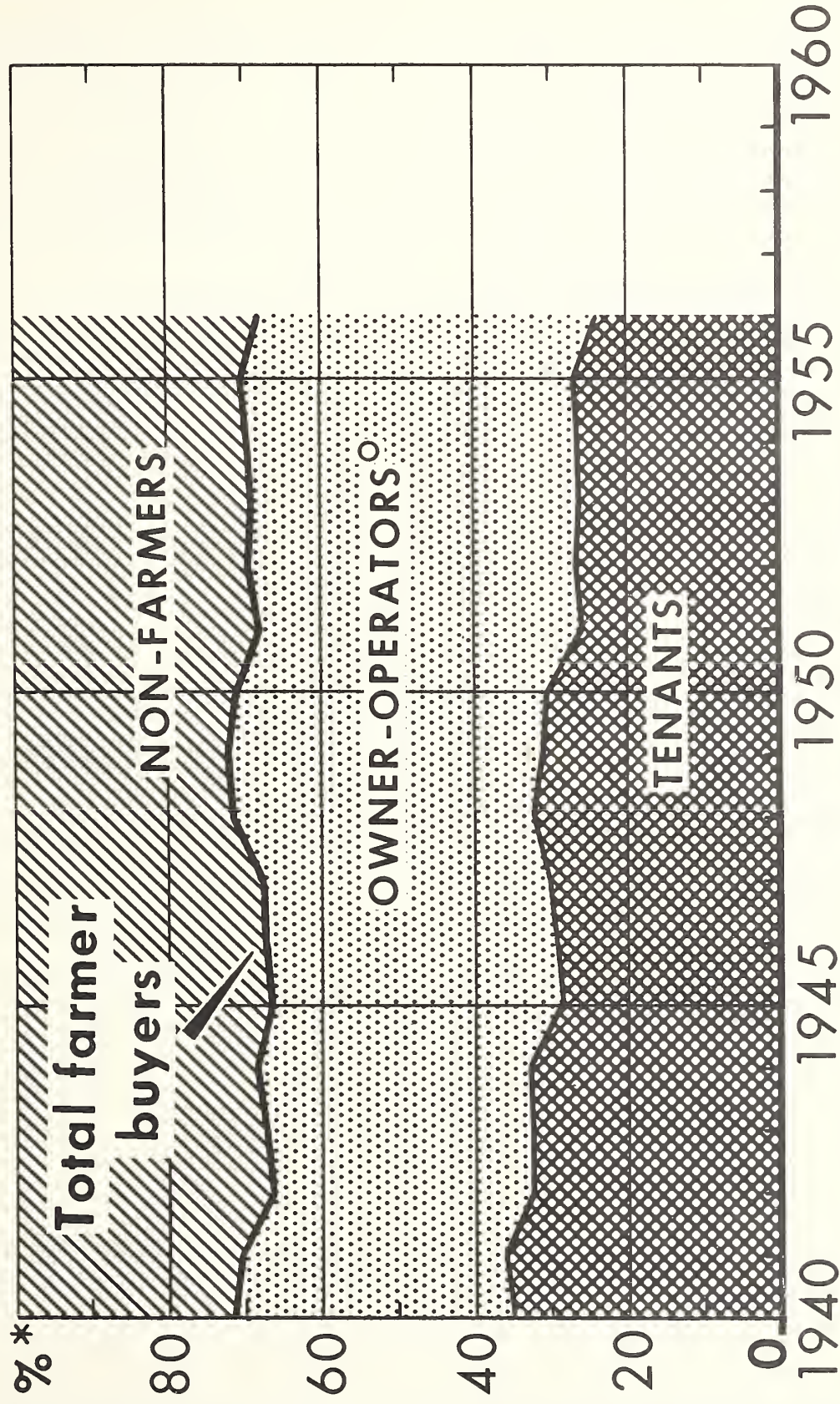
18. Record farm output in 1956. Preliminary estimates indicate that farm output in 1956 increased 1 percent above the previous record set in 1955. At the same time total United States population increased almost 2 percent. The achievement of this record farm output results from the combination of a record livestock production and equalling a record crop production.

Total livestock production in 1956 was almost 2 percent larger than in 1955. Both dairy products and poultry products attained record outturns. Meat animal production nearly equalled the 1955 record. The number of animal breeding units declined slightly but the production per unit was 3 percent greater than the previous year (Fig. 8).

Total crop production in 1956 was equal to the record 1948 outturn. The number of acres of cropland used for crops was not quite as large as the 1955 total, but crop production per acre attained a record high.

19. Fewer farm workers feed more people. Recent data regarding efficiency on farms indicate that each farm worker in 1955 produced food and fiber for himself and nearly 19 other persons compared with 17.7 in 1954 and 13.3 in 1946. Improved technology, both on and off the farm, has enabled fewer farmers to feed an increasing population. In 1955, farm workers made up less than 5 percent of total population; in 1946, the corresponding percentage was 7.3; in 1820, it was 25.
20. Man-hours for some farm enterprises remain large. Although there has been a substantial drop in the number of workers on farms, some crop and livestock operations still take considerable labor. The cut in labor has been far from uniform, and wide differences persist in labor used in proportion to value of product (Fig. 9). Tobacco, milk cows, and cotton are heavy users of labor per dollar of product. Some progress has been made in reducing labor for these enterprises but harvesting tobacco, chopping and picking cotton, and caring for milk cows still take lots of labor, much of it hand labor.
21. Adjustments in specialized cotton farming systems can result in better use of farm resources and increase farm earnings. A study in West Tennessee indicates that adjustments on small upland farms can bring about an increase in family farm earnings of about \$1,340 or 89 percent more than from present farming systems (based on 1949 price level). The adjustments involve a reduction of 24 percent in cotton acreage and addition of dairy and hog enterprises. Addition of these enterprises would require an additional investment of \$2,735, or 47 percent more capital.

WHO BUYS FARM LAND

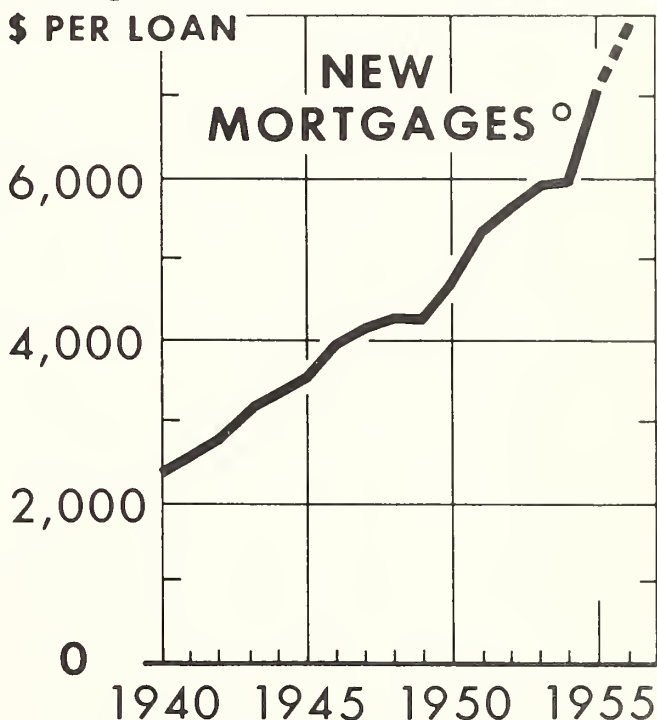
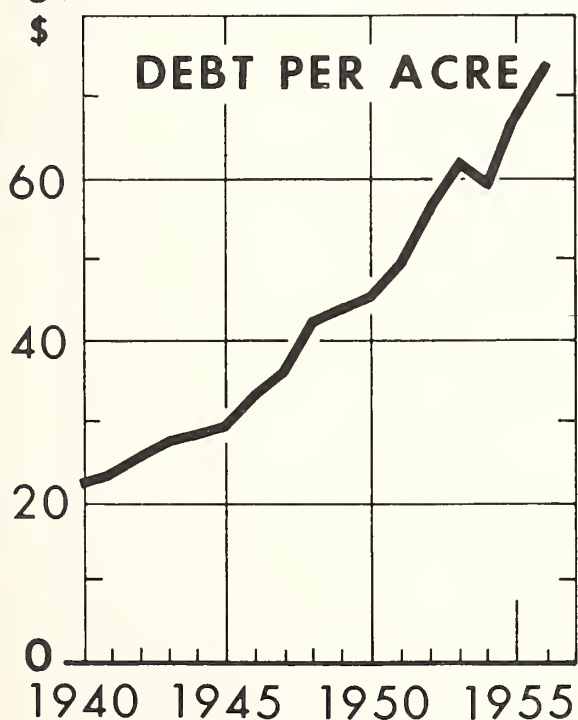
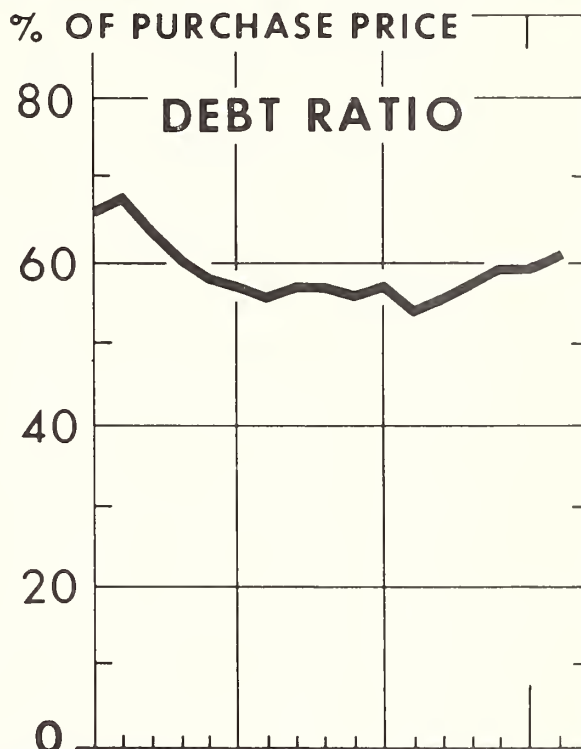
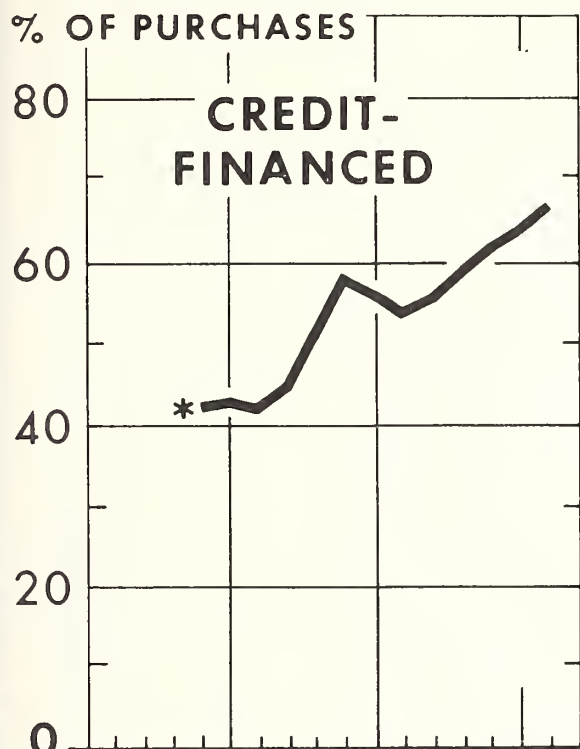


YEARS ENDING MARCH 1

* VOLUNTARY TRANSFERS

° INCLUDES A FEW RETIRED FARMERS

FINANCING OF FARM PURCHASES



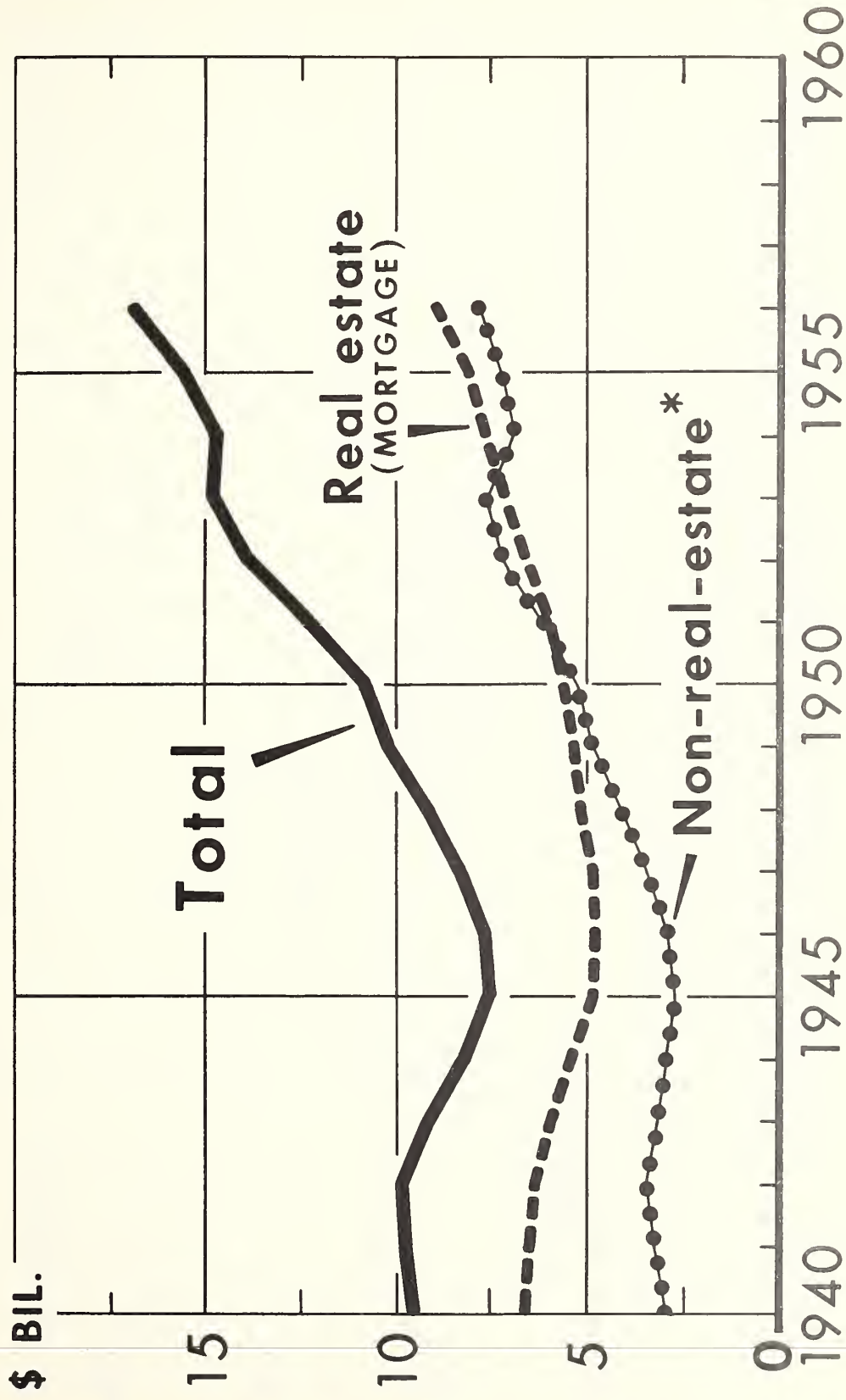
YEARS ENDING MARCH 1.

* NOT AVAILABLE BEFORE 1944.

° FARM CREDIT ADMINISTRATION DATA (CALENDAR YEARS.) ■■■ ESTIMATED.

FIGURE 5

FARM DEBT

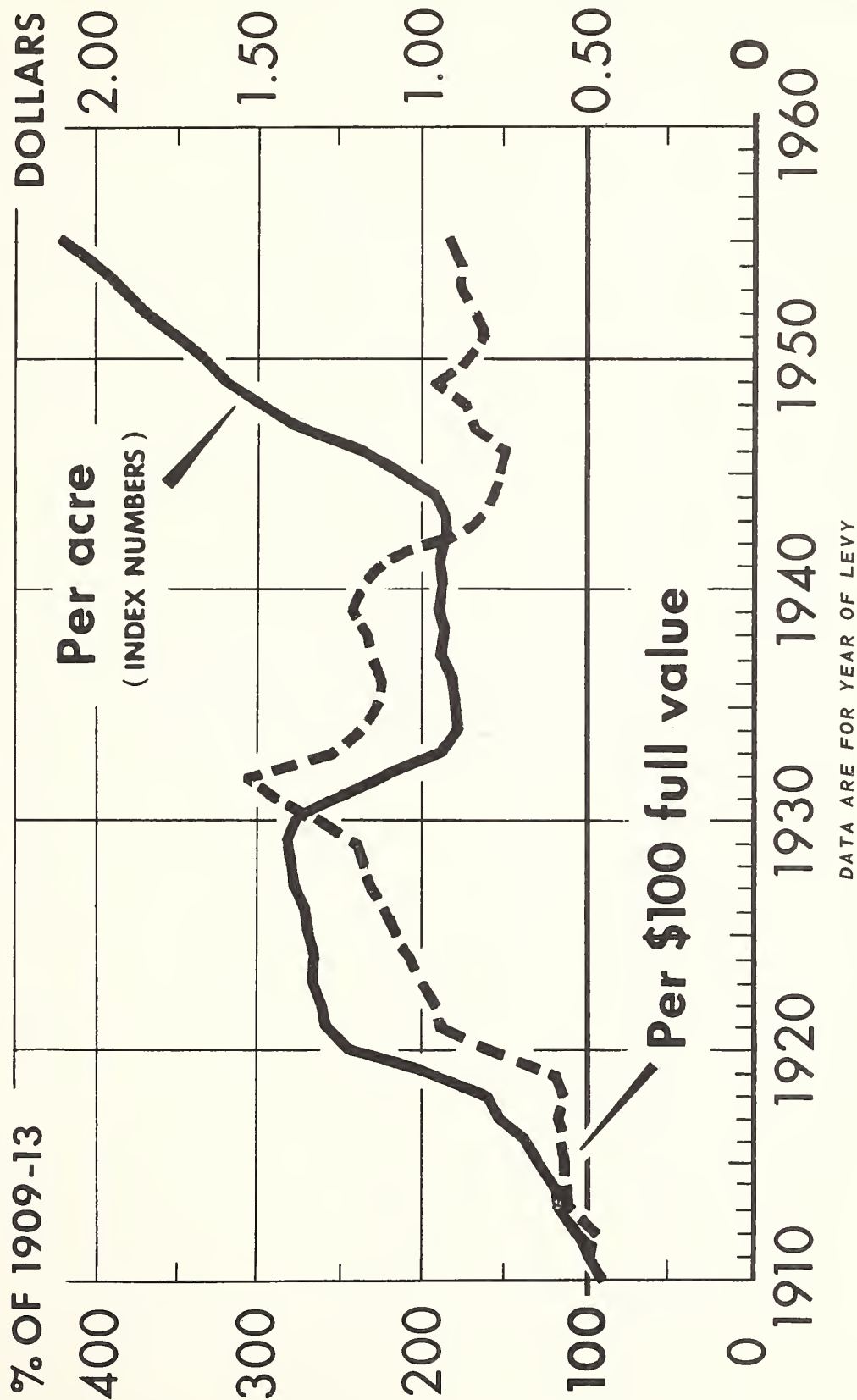


* EXCLUDING CCC LOANS

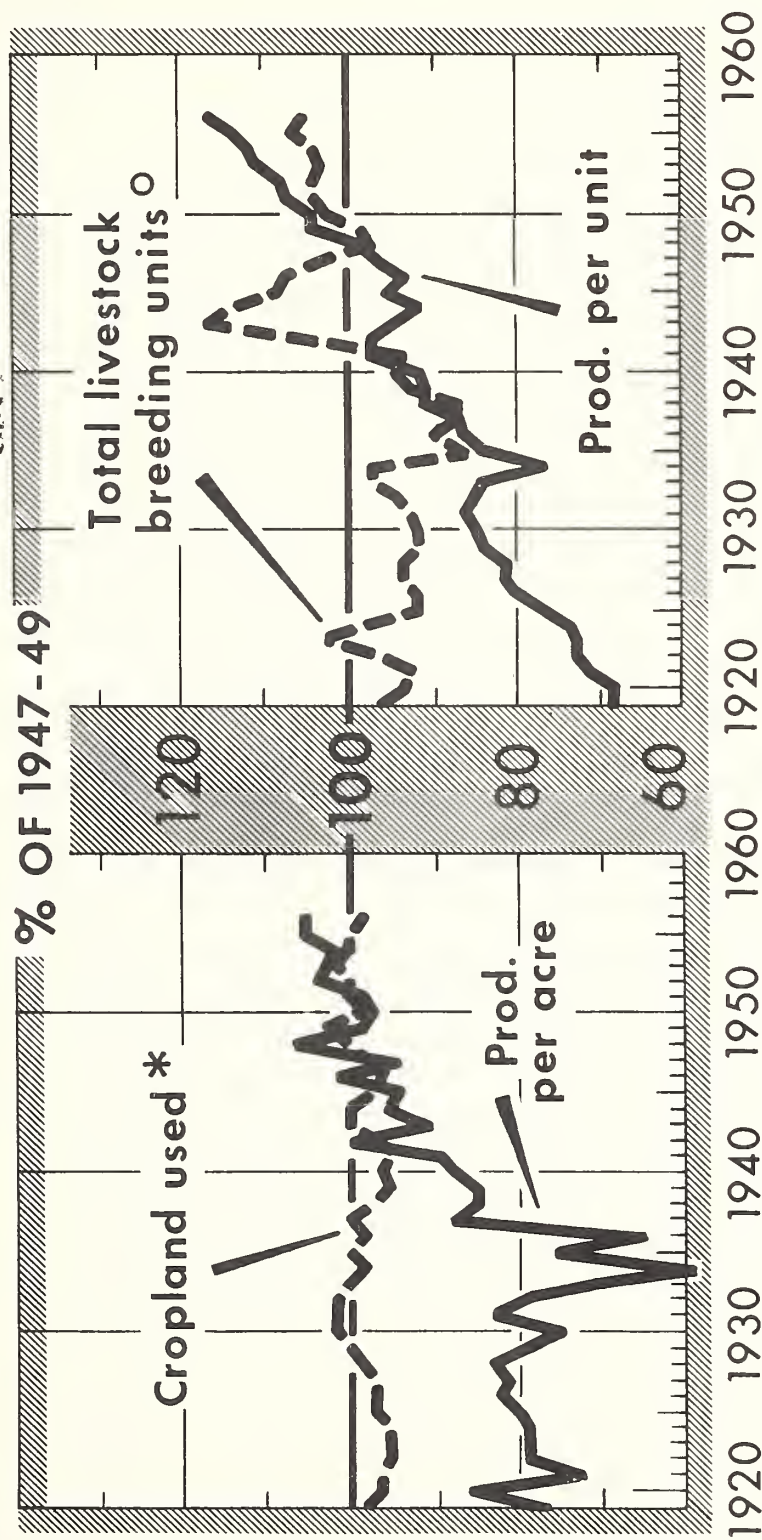
1950 11/24/50

11/24/50

FARM REAL ESTATE TAXES



FARM PRODUCTION PER ACRE AND PER ANIMAL

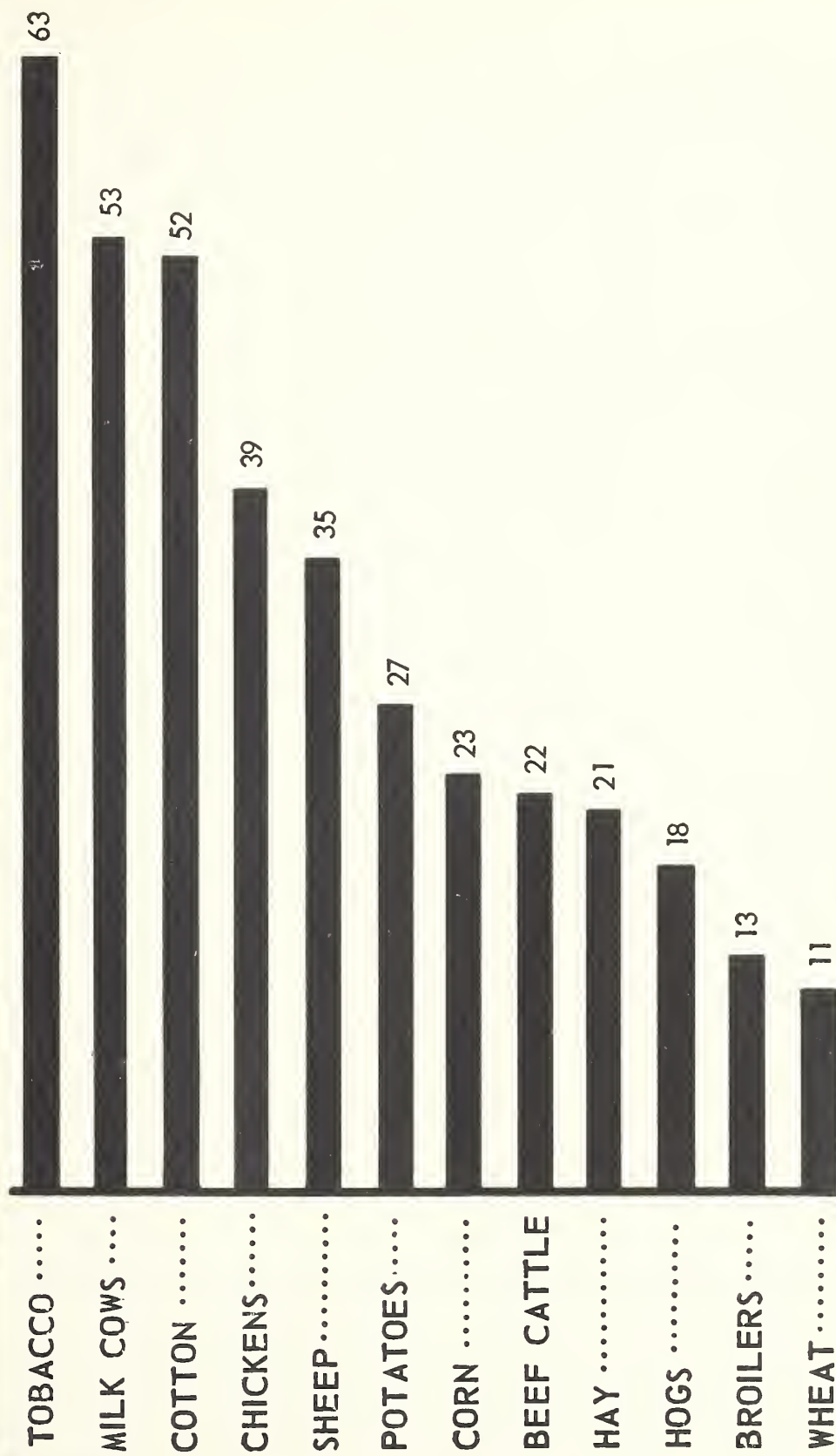


* ESTIMATED ACREAGE FROM WHICH ONE OR MORE CROPS WERE HARVESTED
PLUS ACREAGE OF CROP FAILURE AND SUMMER FALLOW

INCLUDES ALL BREEDING LIVESTOCK EXCEPT HORSES, AND ALL LIVESTOCK PRODUCTION
EXCEPT FARM-PRODUCED POWER OF HORSES AND MULES

Figure 8

Wide Range in Man-Hours Per \$100 of Production, 1955



PRELIMINARY DATA
FIGURE 9



On large upland farms a 50 percent reduction in cotton and the reorganization of the farming system to include dairy and hog enterprises would result in an increase of \$2,160, or 100 percent more family farm earnings than with the present farming system. This change would require an increased investment of about \$14,000, or 82 percent more than is invested in the present system. Another alternative involving the same reduction in cotton acreage and the addition of beef cattle, hog, and poultry enterprises would result in similar increases in family farm earnings and would require about the same amount of additional investment in the business. Compared with present farming systems, the alternative systems would incorporate idle land into the cropping system and would result in increased crop yields through use of more efficient production practices.

22. Study made of economics of returning wheat land to grass. A study in eastern Colorado shows that establishment of permanent grasses on cropland in the Plains is a relatively expensive, time-consuming, and hazardous undertaking. Costs vary from \$13 to \$19 per acre, depending on variety and cost of seed. A 3-year period is required for establishment if the first seeding is successful. Experience indicates that about one-half the seeding must be reseeded, which adds to costs and time. Once established in permanent grass, gross returns per acre are about half those from grain farming, but a farmer can handle a much larger acreage. With a larger operating unit, annual gross returns and annual returns above operating costs per unit approach those from grain farming. A shift in land use from wheat to grass reduces wheat production and the grass cover controls wind erosion.
23. Trends in size of farms. Maintenance of an agriculture characterized by family-operated farms continues to be a high priority objective in this country. In recent years, decreases in farm numbers have led some to speculate that our agricultural economy is drifting away from this desirable type of organization. The data in the following table indicate that during the past quarter century, when allowance is made for price changes and for the increased capacity of a given labor force to handle more land and other resources in our modern agriculture, there has been remarkable stability in the percentage distribution of American farms with respect to size of business.

Number of farms in major size categories at constant levels of farm output per man-hour of labor, United States, 1929-54

Scale of Operations	Number of Farms			
	1929	1939	1949	1954
	Thousands	Thousands	Thousands	Thousands
Commercial farms	4,645	4,155	3,465	3,100
Large-scale farms <u>1/</u>	205	195	155	134
Family-scale farms <u>2/</u>	3,090	2,650	2,135	1,968
Small-scale farms <u>3/</u>	1,350	1,310	1,175	998
	Percentage of Farms			
	Percent	Percent	Percent	Percent
Commercial farms	100.0	100.0	100.0	100.0
Large-scale farms	4.4	4.7	4.5	4.3
Family-scale farms	66.6	63.8	61.6	63.5
Small-scale farms	29.0	31.5	33.9	32.2

- 1/ Farms with work requirements equivalent to that required to produce \$25,000 or more market sales in 1954.
- 2/ Farms with work requirements below that required to produce \$25,000 and above that required to produce \$2,500 market sales in 1954.
- 3/ Farms with work requirements below that required to produce \$2,500 market sales in 1954.

LIVESTOCK RESEARCH

Current activities: Investigations are conducted on all farm livestock, poultry, and domestic fur animals to develop superior strains and types, establish nutritive requirements, determine physiology of reproduction, achieve efficient use of feed and forage in the production of meat, milk, eggs, wool, fur, and other products, develop practical methods of control of diseases and of parasites affecting livestock, and develop improved and efficient dairy management methods and practices.

Selected Examples of Recent Progress

Animal and Poultry Husbandry Research

1. Selection for backfat thickness effective in developing meat-type hogs. Tests have been made at Beltsville to determine the effectiveness of selection for high and low backfat thickness in developing meatier hogs in the Duroc and Yorkshire breeds. First year results indicate that replacement

breeding stock selected on the basis of high backfat thickness by the probe method are generally shorter, lower, and wider of body than those selected for low backfat thickness. These tests continue to emphasize the effectiveness of selection in the production of meat-type hogs, as well as the value of actually measuring backfat thickness by the probe technique as a basis for selection of breeding stock for this purpose.

2. Crossbreeding increases both lamb and wool production. Results of studies at Beltsville indicate definitely that the production of both lambs and wool can be materially increased through the crossbreeding of Hampshire, Shropshire, and South-down sheep. Of all first-cross lambs produced in these tests during the past eight years, 78.6 percent were successfully raised to weaning age of 140 days, compared to only 71.2 percent of purebred lambs of these breeds produced during that period.

During the past 5 years, 82.9 percent of the 3-way cross lambs, produced from first-cross ewes and a purebred ram of a third breed, lived to 140 days of age, compared to 75 percent of purebred lambs. Annual production of live lambs at weaning age averaged 76.9 pounds per ewe from this method of crossbreeding and only 59.1 pounds per ewe for purebred ewes of these breeds. Weight of clean scoured wool produced by 3-way crossbred yearling ewes averaged 4.30 pounds per fleece, compared to 3.41 pounds per fleece for the purebred yearling ewes of these breeds.

3. Dubois studies aid range sheep industry. Research at Dubois, Idaho, on the development of breeding systems to improve range sheep provide a basis for making material improvement in both lamb and wool production through application of effective methods of selection for desirable characteristics. One phase of these investigations involves the development of estimates of heritability to determine how much gain from selection can be expected for important commercial traits. Estimates of heritability obtained for 34 fleece and body traits of 563 yearling Targhee ewes, for example, showed high average estimates of heritability for unstretched length, handle, stretched length, matching yield, and clean fleece weight of wool. Moderately high average estimates of heritability were found for face covering, staple length, fleece grade, noil yield, body weight, weanling index, matching grade, percent noils, fiber diameter, diameter grade, type, grease fleece weight, and breech grade. These results indicate that handle or softness of wool and possibly clean yield should be considered along with fleece weight, staple length, face covering, weaning weight, type, condition, and other lamb production traits in selecting for improvement of Targhee sheep.

4. Performance testing of beef cattle is increasing. There is a steady trend in the industry toward application of the Department's performance testing work. This has been emphasized during the past year by activation of the American Beef Cattle Performance Registry Association; continued growth of performance testing programs in States that organized such programs prior to 1956; initiation of new programs of this type in at least four States during the year; and a rapidly increasing interest in performance testing by established purebred breeders. One of the best known breeders of a popular beef breed has dispersed his herd, which had been developed over a long period of years according to conventional show-ring standards, and has established a new herd which is being bred strictly according to performance testing standards.
5. Feeding stilbestrol to steers does not affect meat adversely. Results of test feeding of stilbestrol to beef steers at Beltsville confirm previous findings by several State experiment stations that this hormone-like chemical can increase the rate and economy of gains without adverse effect on meat quality. In the Beltsville experiments the use of stilbestrol did not reduce the quality of the carcasses or meat as measured by the usual evaluation techniques, including taste tests. The Food and Drug Administration, using a method which was sensitive to two parts per billion, did not detect any stilbestrol in the meat from steers fed this drug. This was also true in the case of steers fed 3 and 6 times the recommended amount. Feeding these high amounts is not advised because the steers so fed did not make as rapid or economical gains as those fed the recommended amount. These extensive tests contradict the claims made in some quarters that meat from stilbestrol-fed steers is not safe for human consumption.
6. Lymphomatosis may eventually be controlled through use of a suitable vaccine. This disease complex causes about one-half of all mortality among adult chickens in this country. Further experiments were completed during the year at the U. S. Poultry Breeding Laboratory at East Lansing, Mich., which confirmed the previous report that the virus of visceral lymphomatosis, when injected into adult chickens will induce the formation of antibodies. The antibodies appear to be transmitted through the hatching eggs to the progeny, giving them a passive immunity to this form of the disease. In this immunization process advantage is taken of age resistance to visceral lymphomatosis acquired by the parental females. Even though this stock was from a highly susceptible line of birds, there was no indication of visceral lymphomatosis over an extended period among the hens after having received numerous injections of the live-virus during the vaccination process. Although much additional research remains to be done before a suitable vaccine for visceral lymphomatosis can be made available commercially for the immunization of breeding stock, it now appears likely that this cancer-like disease can eventually be controlled through a vaccination program.

Dairy Husbandry Research

7. Dairy herd improvement and sire proving work at highest level in history. During 1955, 636,293 lactation records were received from the various States for use in proving sires. A total of 5,986 sires were proved, the largest number ever proved in any one year. The daughters of these sires averaged 10,236 pounds of milk, and 415 pounds of butterfat. The national average for all cows is 5,815 pounds of milk and 232 pounds of butterfat.

On January 1, 1956, there were 1,780,785 cows on Standard DHIA and Owner-Sampler test. Of this number 1,406,306 cows were on Standard DHIA test, the largest number ever on test in this country. Cows on DHIA test now have an average production of 9,363 pounds of milk and 372 pounds of butterfat, an all-time high level of production.

8. Special dairy lactometer adapted for routine use in determining solids content of milk of individual cows. A specially designed dairy lactometer used for determining the solids content of milk has been modified and adapted for use in the analysis of milk of individual cows. The modification makes it possible to use small quantities of milk for the test. The lactometer and accessory equipment are adaptable for use in determining as many as 40 samples of milk simultaneously. This accomplishment will make it possible to introduce total solids analysis of milk of individual cows for field use and in breeding research.
9. Embryonic mortality found to be an important cause of infertility in cattle. It has been established that about 20 percent of embryos are lost due to ill-defined causes within 30-35 days after breeding. This loss is an important factor in reduced fertility of cattle. It now appears that the critical period in embryo survival is from 16 to 22 days after fertilization. A collection of suitable embryos has been obtained for a study of causes of early embryo losses. The work has been undertaken cooperatively at the University of Massachusetts.
10. Inedible fats used successfully in calf starter rations. Inedible stabilized tallow has been successfully utilized by calves when fed in amounts up to 10 percent of the starter ration. The starter containing the fats was palatable and the calves were 5 percent heavier than the controls at 90 days of age. Use of inedible fats in rations provides an outlet for surplus fats.
11. Good management improves the yield of dairy pastures. Research has been carried out at the U. S. Field Station at Lewisburg, Tenn., to determine suitable pasture mixtures and management practices for grazing. An alfalfa-orchardgrass mixture grazed

rotationally throughout the grazing season produced satisfactory yields over a 5-year period. However, this same mixture produced 40 percent more feed nutrients per acre when rotational grazing followed removal of one cutting for hay or silage early in the season.

Animal Disease and Parasite Research

12. Experimental anaplasmosis control program conducted. A program of complement-fixation tests, accompanied by segregation of negative and reacting animals, resulted in the reduction of the disease in a Virginia herd of purebred Hereford cattle. These results suggest the possibility of an effective and practical control program for the eradication of this disease in certain areas by using the complement-fixation test for detecting the infection in "carrier" and subacute cases.
13. Advance made in standardizing Brucella milk ring antigen. The aging of hematoxylin dye solution used for staining this antigen has resulted in stabilizing the sensitivity of this diagnostic agent. This is an important step in its standardization. This test is widely used in the present brucellosis eradication program.
14. Studies of bloat in cattle and sheep continued. Bloat continues to cause serious losses to grazing and feedlot cattle. Recent experiments on bloat have thrown additional light on concepts previously held in some quarters. It has been found that making alfalfa into silage does not prevent bloat; saponin is not the only cause of bloat; and large doses of methyl silicone will prevent bloat for only several hours.
15. Mature chickens indicated as another test animal for use in diagnosis of vesicular stomatitis and vesicular exanthema. Mature chickens inoculated with these viruses reacted consistently to vesicular stomatitis but not to vesicular exanthema, indicating they could be used as test animals in the differential diagnosis of these diseases. Since chickens are readily available for the differential tests required for these diseases their use would be a valuable adjunct to present tests and assist in early diagnosis.
16. Toxicity of insect sprays and dips to livestock determined. The minimum toxic dose and the maximum safe dose for livestock of 17 commonly used chemicals for control of insects of livestock and plants have been determined when applied to the skin as sprays or dips, and when fed. The symptoms and gross lesions seen in poisoning by these insecticides were ascertained. Abdominal surgery operations were performed to collect tissues for residue studies to help in establishing tolerances under P. L. 518, which amended the Federal Food, Drug and Cosmetic Act.

17. Studies made in Georgia of losses from roundworms of cattle. Affected animals harbored an average of more than 100,000 parasites per head, whereas non-affected animals in the same general area had less than an average of 5,000 parasites per head. Morbidity and mortality losses in 13 herds studied were calculated to have caused monetary losses of \$56 to nearly \$3,200 per farm, the average loss per farm investigated being nearly \$1,500. In this investigation 17 different kinds of roundworms, 2 of which have not been previously found in the South, were discovered. In the area under study losses from parasites have been a serious drain on cattle production in the last few years.
18. Occurrence of phenothiazine-resistant strains of internal nematode parasites observed in sheep. Investigations were made in a flock in Kentucky, maintained continuously on a low-level regimen of periodic drenching and free-choice administration of the drug for 10 years. They showed that 2 to 4 times more phenothiazine was required to achieve inhibition of larval development and depression of parasite egg counts comparable to that obtained with control or normal strains. In specific trials with the common stomach worm of sheep, 4 to 8 times more drug was required to obtain inhibition of larval development comparable to that obtained with normal strains. Although these findings require confirmation, they show the need for a thorough investigation of drug resistance among nematode parasites, a phenomenon not previously encountered.

ADMINISTRATION OF PAYMENTS TO STATES, AND TERRITORIAL RESEARCH

Current activities: For work to be done under Federal grant funds, new and revised research proposals from the State agricultural experiment stations are evaluated and approved, annual programs and budget allotments are reviewed and approved, work and expenditures of each experiment station are examined in the field, and assistance is given to States in organizing, planning and coordinating their research.

The Department operates agricultural experiment stations in Puerto Rico, Virgin Islands, and Alaska. In Puerto Rico research is conducted primarily on tropical and subtropical crops of economic importance to the continental United States including food, forage, and specialty crops. In the Virgin Islands research and extension work is conducted in the fields of soil and water conservation, improvement of crop plants for commercial and home use, animal husbandry and development of better rural living conditions. Research in Alaska, carried on as a joint program of the Department and University of Alaska, includes soil analysis, horticulture, animal husbandry, agricultural economics, agricultural engineering, insect and plant disease control, and field crop improvement studies.

Selected Examples of Recent Progress

1. Machines lower land-clearing costs in Alaska. Of three fields cleared two years ago by different methods, only that on which the forest was removed by conventional bulldozing gave satisfactory crop yields. Areas that had been chain sawed were still littered with stumps and brush. Although fairly good grass stands were obtained during the second crop season on these fields, they were difficult to fertilize and graze. Chainsawing and burning provides an opportunity for use of farm labor during the winter months, but the cost of stump removal is excessive. Power requirements for stump removal are large because the major portion of the tree, which normally serves as a lever in removing stumps and roots, is gone. The need for stump pastures, which lend themselves only to extensive grazing, is not great enough to warrant widespread use of this clearing practice. On the other hand, bulldozing and windrowing appear to have few disadvantages other than cash or credit requirements.
2. Viability of Napier grass seed improved in Puerto Rico. Napier grass (*Pennisetum purpureum*), an important forage grass in Puerto Rico, usually is propagated by vegetative means because of the low viability of its seeds. By cutting plots of this grass at various times before flowering, thus controlling the age of the new flowering stalks, up to 27 percent viable seed has been obtained. This is three to five times the usual germination percentage for this species. Plants 14 weeks old produced seed with the highest germination percentages; germination in younger and older plants was less satisfactory.
3. Newly introduced sugarcane variety gives promising yield in the Virgin Islands. Sugarcane variety B41211, newly introduced in the Virgin Islands produced a yield of 1800 pounds more sugar-in-the-bag on an acre of land owned by a cooperating farmer than was obtained from an adjacent acre planted to a local standard variety. These field trials are coordinated with land use studies to increase the efficiency of agricultural practices and improve the economic stability of the Islands' farmers.

HOME ECONOMICS RESEARCH

Current activities: Investigations are conducted on human nutritional requirements, the composition and nutritive value of foods, and problems relating to the household preparation and preservation of foods. Studies are made of problems in the household utilization of textiles, clothing, and equipment, and of family requirements for housing and related facilities. Investigations are made also of food consumption practices and the nutritive value and economy of customary diets, patterns of rural family expenditures and production for household use, and economic problems of household management.

Selected Examples of Recent Progress

1. Human requirements for amino acids studied. Pioneering research on requirements for the protein building blocks (amino acids) has provided the first data indicating the quantitative requirements of young women for 8 of the "essential" amino acids. The amino acids studied were: isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophane, and valine. The values were derived from studies of biochemical metabolism in more than 50 women, for periods of three to six weeks each. The results are already being used in nutrition research and education in this country and made a significant contribution to an FAO Expert Committee report on protein needs and methods for their fulfillment for population groups throughout the world.
2. Fatty acid requirements of children studied. Better understanding of requirements for unsaturated fatty acids and of the role of fats in human nutrition is emerging from a series of studies with children. Linoleic acid, the "essential" fatty acid most widely distributed in foods, appears to aid in the metabolism of fats. The linoleic acid content of blood serum was found to be higher in well-nourished infants than in children with poor fat absorption, and higher in infants receiving human milk rather than cow's milk. Human milk was found to be higher in linoleic acid than cow's milk and the difference in diet was reflected in lowered blood levels in a relatively short time after infants were shifted from human to cow's milk formula.
3. New guide to good nutrition issued. A bulletin titled "Essentials of an adequate diet" was prepared to meet the many requests from nutritionists, extension workers, and others engaged in nutrition education for up-to-date and authoritative material to use in nutrition programs. The most recent research on human nutritional needs, nutritive values of foods, and food consumption habits provides the basis of the recommendations. For example, the nutrients most likely to be short in diets in this country were considered, together with the foods that are good sources of these nutrients, in developing the base plan for an adequate diet. Because different kinds of foods can provide the essential nutrients and because food supplies in this country are ample to provide for considerable freedom of choice, the bulletin presents a "point" system to show how common foods rate as sources of key nutrients. Using this system, foods within the basic groups can be interchanged to allow for differences in availability of foods, food budgets, food preferences, and so forth, with the assurance that a good diet can still be obtained.

4. Table for estimating food yields completed. Information has been brought together from many laboratories on the yield of ready-to-eat foods that can be expected from meat, fruits, vegetables, and other foods purchased on the market. The publication "Food yields--summarized by different stages of preparation" gives dietitians and food managers an up-to-date guide for planning food purchases for school lunchrooms, hotels, restaurants, the Armed Forces, hospitals, and other institutions. The data take account of present day practices in processing and marketing food and new developments in breeding plants and livestock that affect yield, not reflected in earlier less comprehensive summaries of yield data.
5. Publication on bread included in Facts for Consumer Education Series. The publication on bread, which was completed this year, was especially well received. The declining consumption of grain products in this country shows that many people have not realized the many-sided contribution that grain products make to a nutritionally adequate diet. For example, 5 slices of bread provide over 15 percent of the recommended dietary allowances for protein, thiamine, iron, and niacin, and about a tenth of the calcium, riboflavin, and food energy needs of a 25-year-old man. The bulletin also shows the economy of bread. City families reporting in a recent survey spent only 4 percent of their food budget for bread and for this sum received 9 to 14 percent of their total supply of 6 nutrients.

This publication series is designed to present basic research material on nutritive values and consumer buying and use of foods for consumer education and marketing programs. It has now covered the following foods: Beef, pork, tomatoes, peaches, milk and milk products, and bread. A bulletin on potatoes is in preparation.

6. Data on fabric quality compiled. This compilation brings together results of investigations of properties and serviceability of 1,354 different household and clothing fabrics classified under 26 categories. The data, selected from studies made by the Department, by agricultural experiment stations, and by colleges and universities engaged in textile research, furnish a basis for recommending acceptable qualities for certain fabrics and point out the gaps where further research is needed. In another bulletin facts on present-day fibers, fabric construction, and finishes were also brought together to help the average purchaser in judging a fabric for its general wearing qualities and its suitability for specific purposes.
7. Bulletin prepared on washing fabrics. Good results in laundering depend in part on the correct use of detergents--both soap and synthetic detergents--in relation to the nature of the fabric being washed and the amount and kind of soil to be

removed. A new Home and Garden bulletin has been prepared to provide information on types of detergents currently available for household use, and the results of research on their ability to remove soil from various kinds of fabrics under different conditions, and the effects of detergents on certain fabric properties. As part of research to improve home laundering methods, a laboratory technique was developed for measuring analytically the efficacy of various materials for whitening and maintaining whiteness in cotton fabrics.

UTILIZATION RESEARCH

Current activities: Investigations are conducted in the field of chemistry and related physical and biological sciences to develop new and improved foods, feeds, drugs, fabrics, industrial chemicals, and other products from agricultural commodities; to devise improved methods for evaluating the suitability of commodities for processing; to devise better processing methods; to increase the use of byproducts; and to solve waste disposal problems thus effecting maximum utilization of agricultural commodities.

Selected Examples of Recent Progress

1. Dialdehyde starch produced by low-cost process from cereal starch. Dialdehyde starch (periodate oxidized starch), a potential industrial raw material, has been produced from cereal starch by a new low-cost electrolytic process, which requires only small amounts of the expensive oxidizing agent, and this is largely recovered for re-use. Many derived products are possible, depending on the extent of oxidation or degree of secondary chemical modification employed. Slight oxidation gives products similar to starch but having modified paste characteristics of the type used for textile and paper sizing and similar applications. Complete oxidation gives rise to a new product unlike starch. Dialdehyde starch is being made in lots of several pounds to determine processing data needed to produce it in amounts sufficient for investigation as a source of raw material for the large and rapidly growing plastics industry, for conversion to electrically charged polymers useful as thickening or stabilizing agents, or as a chemical intermediate for the production of commercially valuable aldehydes, alcohols, and hydroxy acids.
2. Organisms found which increase production of high quality microbial proteins for feed. Corn and other grains used in farm livestock rations are deficient in protein both as to quality and quantity. Despite the extensive use of soybean meal and other protein concentrates, additional supplements of the amino acids lysine, methionine, and tryptophane are needed. A survey of microorganisms has been made to determine their

total protein content and the proportion of lysine, methionine, and tryptophane content in order to find microorganisms capable of converting the starch of grain into protein concentrate high in these essential amino acids. Among 600 organisms already studied, some have been found that contain up to 12 percent lysine in their protein, as compared with 2-1/2 percent and 6 percent, respectively, in the proteins of corn and soybean meal. It is hoped that the lysine level can be raised to 20 percent through further studies directed toward producing mutations of selected microorganisms.

3. New machinery for opening and cleaning cotton shows promise. A new type opening-cleaning machine is under development that shows great promise for effectively cleaning mechanically-harvested and roughly hand-harvested cottons in textile mills. A half-size experimental opener-cleaner, which retains the opening and blending features of the highly successful and previously commercialized USDA cotton opener and includes means for cleaning, is capable of removing 30 to 40 percent of the trash from cotton at the exceptionally high production rate of 3000 pounds per hour. This cleaning efficiency is twice as high, and the production three times as great as those obtained with standard textile cleaning equipment. A commercial size machine is now under construction for final laboratory and mill scale evaluations.
4. Combination treatment gives cotton fabrics greatly improved resistance to weathering. A recent discovery has shown how excellent resistance to sunlight can be added to the outstanding mildew- and rot-resistance of partially acetylated cotton. This result is achieved by a combination process in which the cotton is first dyed with certain light-stable vat dyes and then treated with the chemical called acetic anhydride to cause partial acetylation. From the results of weather exposure tests, it is estimated that the combination process applied to cotton will increase the outdoor service life two- or three-fold. This excellent resistance to sunlight and weathering has been demonstrated with cotton sewing thread exposed on the weather racks for 12 months. The vat-dyed acetylated samples have retained between 80 percent and 85 percent of their original strength. By contrast, the untreated thread retained only 18 percent of its original strength and the acetylated thread retained 24 percent. This achievement should significantly improve cotton's competitive position in both civilian and military markets requiring excellent resistance to weathering. Potential markets requiring weather resistant fabrics amount to about 500,000 bales of lint cotton per year.

5. Continuous machine developed for cleaning and classifying cottonseed. A high-capacity experimental machine called the "differentiator" has been developed which in trial tests is capable of continuously cleaning cottonseed and at the same time separating the seed into fractions according to grade. The machine, which utilizes the principle of the well-known sling-shot, imparts a high velocity to the contaminated seed by means of a pair of high-speed dual belts arranged to grip and project the particles horizontally for distances up to 100 feet. The new process concentrates the bulk of the foreign material (leaves, sticks, stems, shale, etc.) and low quality (immature, decayed) seed relatively close to the machine, and projects the seed of high quality some distance from the machine. The seed of good quality are fractionated according to grade, the seed higher in protein and oil content and in quality of oil, and lower in linters content, falling farthest from the machine. Not only does the machine appear to be good for cleaning and fractionating seed for oil mills but it also offers promise for the production of better quality planting seed and for cleaning and separating a wide variety of other seeds, beans, grains, and mixtures. The capacity, costs, performance, and improvement of the differentiator are now being studied further and evaluated.
6. Time-temperature tolerance of frozen foods studied. During the past 8 years production of frozen foods has expanded so rapidly that industrial facilities such as refrigerator cars, trucks, storage facilities, and retail cabinets have been taxed to handle the volume. This pressure of rapid industrial development has emphasized the need for comprehensive and exact information on the relationships between temperatures experienced by frozen foods on the one hand and quality and consumer acceptability on the other. A comprehensive investigation has been undertaken to determine time-temperature tolerance of frozen foods. Studies of five fruits and two vegetables have been completed. More than 50,000 packages of commercial frozen foods, collected on a nation-wide scale, have been used thus far. Improved processing and packaging procedures, to ensure high quality in frozen foods delivered to the consumer, have been discovered. Results of a large portion of these studies were published in 1956 and additional results will be published as quickly as they can be obtained.
7. Antibiotics developed for control of plant diseases. In research to help reduce plant losses from microbial diseases and to utilize surplus grain products, some 1,000 microorganisms have been screened for antibiotics effective against plant diseases. About 15 have been carried through all phases of the screening program, including greenhouse tests with infected plants. Most of the 15 produce antibiotics effective, in varying degrees, against at least one disease. On the basis of

greenhouse tests one antibiotic, designated F-17, shows especial promise in controlling wheat and bean rust, as well as several other diseases. A stable dry form of F-17, which would be required for widespread use, is fairly simply made by spraydrying the fermentation liquor.

8. Belt-trough drier developed for fruits and vegetables. A new type of drier for cut fruits and vegetables has been developed and proved in commercial use. In this drier a metal-mesh endless belt maintains a troughlike shape as it moves. The cut pieces flow through this trough and are kept from clumping and sticking by the continuous motion of the belt. The drier thus maintains a uniform, constantly mixing bed of material. The pieces are dried uniformly and heat is used effectively. A commercial model of the drier has been in use for some months, performing satisfactorily on pimientos, peppers, celery, carrots, and other vegetables. Apple slices have been dried successfully in a pilot plant model. Improvement in product quality and substantial reduction in labor, as compared with other equipment, have been obtained in all trials. The drier has proved suitable for the first stage of ordinary dehydration, or for the entire drying operation in the dehydrofreezing, dehydrocanning, and dehydrobrining processes. The three last-named processes consist of partial drying followed by freezing, canning, or brining. Commercial exploitation of these processes will be advanced materially by the new drier.
9. New developments provide for super-drying dehydrated mashed potato (potato granules) and aid production of potato flakes. Adaptation of the "fluidized bed" principle, used in certain nonfood industries, has resulted in the development of equipment for final drying that is now used by all United States potato-granule manufacturers. Entering the drier in a continuous stream, the partly dried potato particles are dried further by a gentle, upward-moving stream of warm air, which removed moisture uniformly and efficiently and avoids abrasion which would reduce their ability to make excellent mashed potatoes. While it is impractical to lower moisture in granules much below 7 percent in other driers, the "fluidized bed" functions well down to 3 percent, or even lower. Adoption of this means of stabilizing granules has contributed to the present expanding market for this "instant" form of mashed potatoes.

It has been demonstrated also that potato flakes can be manufactured by using a single drum drier. As a result of this work, commercial production is being considered by a number of processors from Maine to California. The ease of reconstitution and high quality of the reconstituted product should make potato flakes extremely popular for household, restaurant, and institutional use.

10. Two firms licensed to produce pinane hydroperoxide, a new chemical from turpentine. Research conducted in cooperation with the Office of Rubber Reserve has resulted in the production from turpentine of an excellent catalyst or initiator for the manufacture of "cold" rubber. This catalyst, called pinane hydroperoxide, is produced from turpentine by a simple two-step process. Both the product and the process are protected by a patent assigned to the Secretary of Agriculture. Licenses to use this patent have recently been issued to two large chemical manufacturers, who are now supplying the new chemical on a pilot-plant scale. Pinane hydroperoxide is expected to find use not only in synthetic rubber production, but also to make plastics and as a chemical intermediate. About 2,000,000 pounds of other peroxides per year are currently used in the production of synthetic rubber.

11. Detergents from animal fats commercialized. The principal use for tallow, which is to make soap, has declined considerably over the past fifteen years. Research on chemical reactions to make improved detergents from tallow has now led to pilot-plant production of alpha-sulphonated tallow acids by one of the large meat packing firms. The alpha-sulfonated acids are inexpensive intermediates for improved synthetic detergents from tallow. They are also versatile surface-active agents and are advertised for use in ore flotation, emulsion polymerization, as grease and lubricating-oil additives, and as chemical intermediates. This development holds promise for a very significant new market for tallow and reversal of the trend away from fats as the raw materials for detergent manufacture.

PLANT DISEASE AND PEST CONTROL

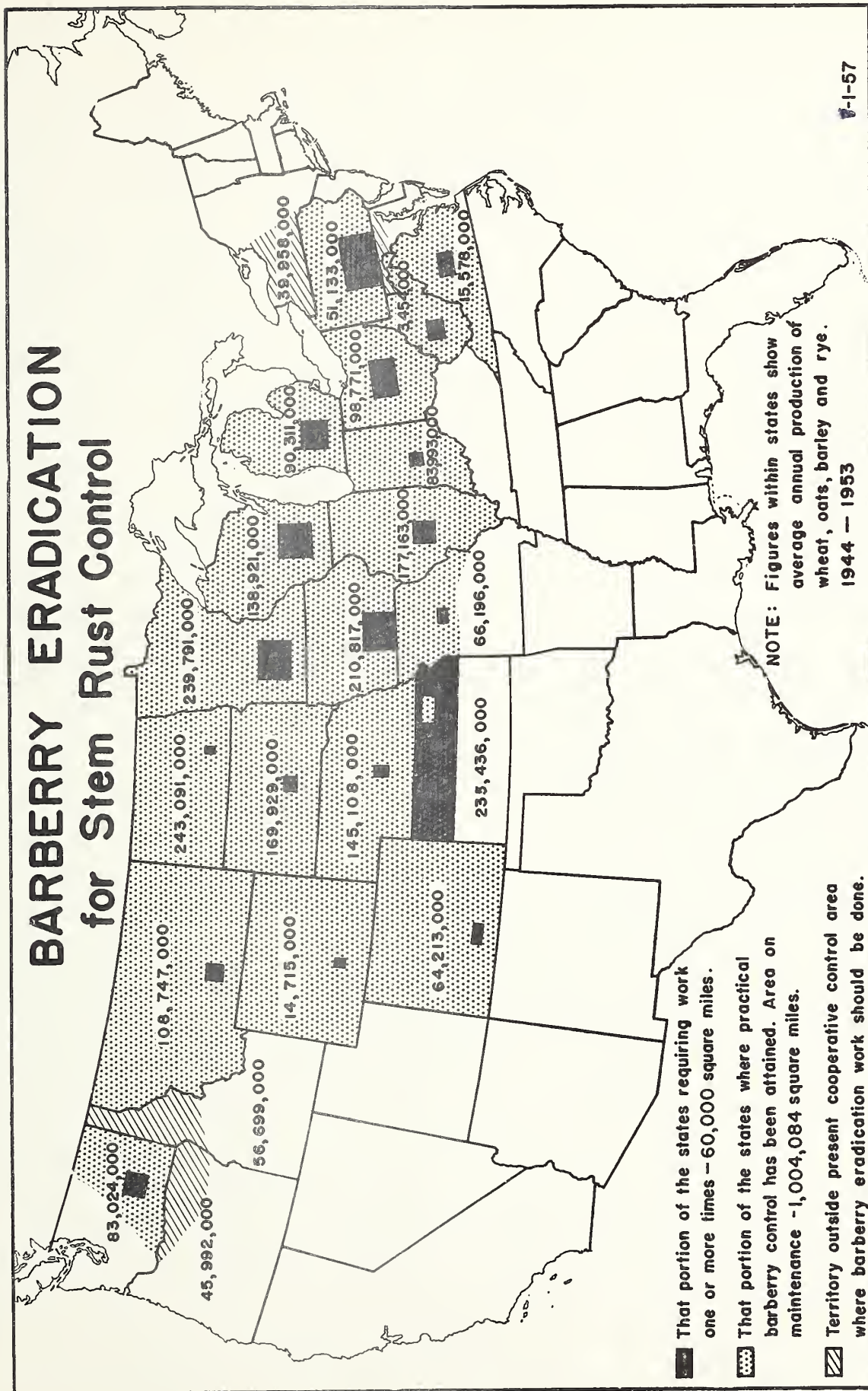
Current Activities: The work is divided into three categories: (a) insect and plant disease control, designed to protect agriculture from destructive insects and plant diseases, including inspection to detect and appraise infestations, certification of regulated articles, supervision of treatments required by plant quarantines, applications of pesticides, and use of other methods of combating infestations; (b) protective measures, primarily inspections at ports of entry to prevent the introduction from abroad of pests and plant diseases, and certification of the absence of plant pests on plants and plant products for export; and (c) administration and enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act to prevent the sale of mislabeled and inadequately labeled economic poisons, and to safeguard farmers and other users from injury to crops, livestock, or themselves, and from loss resulting from deceptive, careless, or fraudulent marketing practices.

Selected Examples of Recent Progress:

Plant Pest Control:

1. Barberry eradication. Significant accomplishments mark season's work on barberry control. During the fiscal year 1956, some 17,437,186 barberry bushes were destroyed on 4,953 properties in the 19 states, in which eradication work is conducted. Control work was done in areas totaling 14,272 square miles and 10,450 square miles were placed on maintenance. The total area in the 19 states requiring future work is 60,000 square miles. (See Figure 11). Forty-nine nursery firms not previously authorized to ship barberry and mahonia interstate requested inspection of their stock in 1956. Since 1949 the number of nurseries applying for permits to move barberry and mahonia interstate has increased from 265 to nearly 500. During this period permits issued to dealers who purchase stock for resale increased from 28 to 72. These firms are located in 40 states and in the District of Columbia. Thorough inspections are made of all nursery stock regulated by the provisions of Federal Quarantine No. 38.
2. Citrus blackfly and Mexican fruit fly control.
 - a. Number of citrus blackfly infestations increased slightly in northeastern Mexico and southern Texas. Mexican officials and fruit growers continue to cooperate in maintaining a buffer zone in both northeastern and extreme northwestern Mexico for citrus blackfly. Infestations occurring in this zone are eradicated as soon as located. Infestations in northeastern Mexico have been treated with oil sprays as an eradication measure. Action taken in cooperation with the Texas State Department of Agriculture is believed to have resulted in the eradication of some

BARBERRY ERADICATION for Stem Rust Control





eighteen infestations found in that State during the year. No active infestations were known to exist in Texas as of December 31, 1956. The status of the citrus blackfly control program is shown in Figure 12.

- b. Northwestern Mexico and southern California become reinfested with Mexican fruit fly. After repeated sprayings and negative trap operations extending over many months, Mexican fruit flies began to re-appear in traps in June of 1956 in border areas of both countries. In spite of the requirement that all fruit shipped to northwestern Mexico must be fumigated, some untreated fruit is occasionally smuggled into the area. A preventive program, including trapping, spraying, and inspection on both sides of the international border, has to date kept the Mexican fruit fly from becoming established in the large fruit producing areas of California and Arizona and has thus far eliminated the need for an extensive and costly eradication campaign.

It is evident that the program of preventing heavily infested host fruits such as mango, citrus, and other products of the generally infested area of Mexico from reaching the border areas in northwest Mexico will be a continuing problem. The Mexican Department of Agriculture continues fully cooperative and the arrangement provides for our assisting in operation of vehicular quarantine stations deep in Mexico at which points fruit bound for border areas of Mexico is fumigated. Inspection of rail, air, and sea traffic including both passenger baggage and freight shipments are being continued. Plans are currently being developed to render assistance in inspection of postal shipments.

- c. Mexican fruit fly infestation in Texas continues low. As was the case last year, the Texas citrus crop was harvested before the migrating fruit fly population had time to build up to expected numbers. Infested fruit was found in only thirteen grapefruit plantings, and only twenty-six flies were taken in traps throughout the regulated area. The necessity for fruit treatment to prevent spread of this insect remains constant as fruit from Texas is shipped to other fruit growing sections of the nation. The status of the Mexican fruit fly control program is shown in Figure 13.

3. Golden nematode control.

- a. Survey on Long Island shows further decline in land newly infested by golden nematode. The survey in the calendar year 1955 added only 215 acres not previously known to be infested. This is the lowest newly infested acreage to be found since the program was begun 10 years ago. The downward trend is also evident in 1956 with only 3 new infestations involving 150 acres found through November 15. These

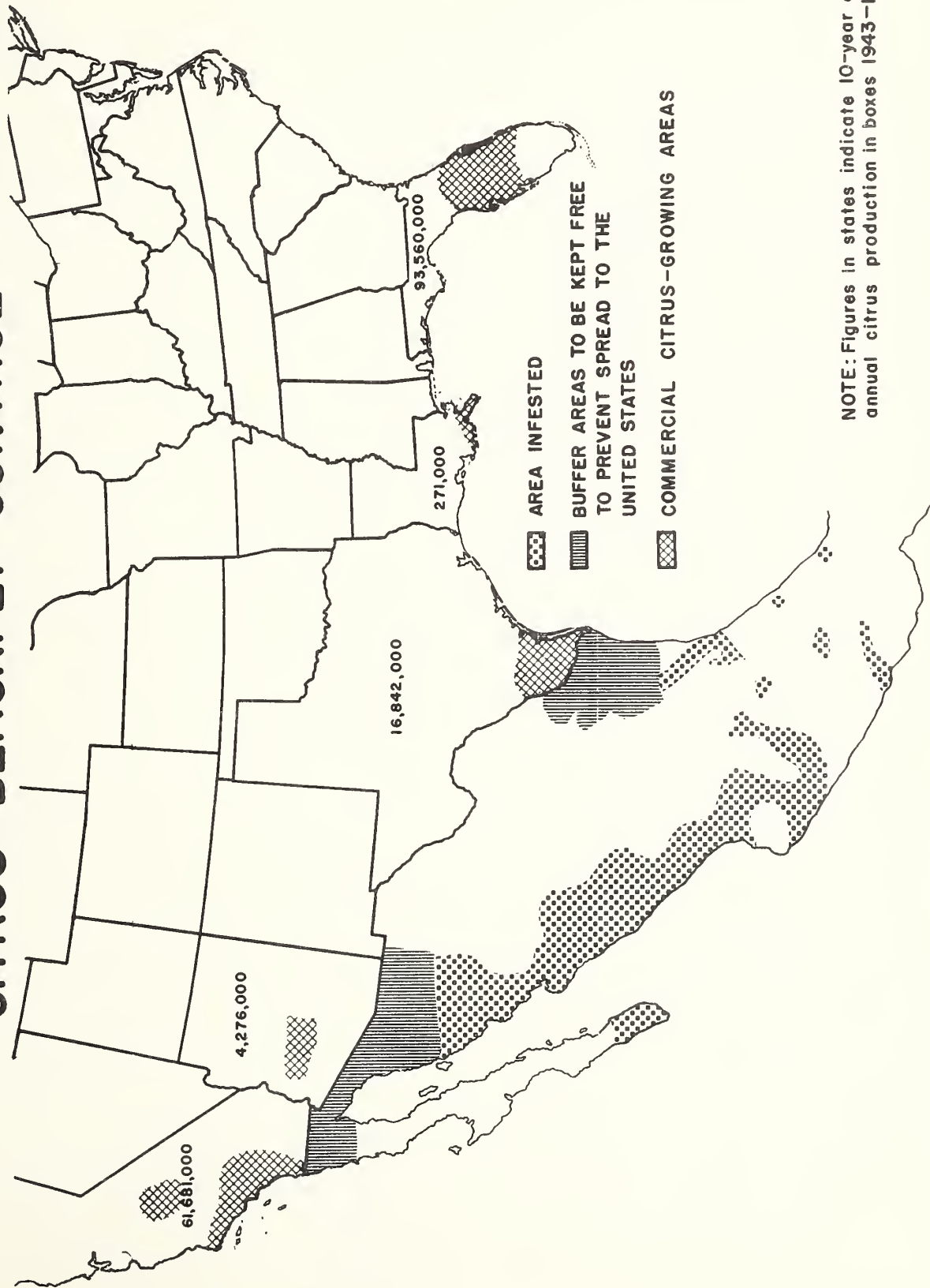
results demonstrate the effectiveness of the program procedures involving survey, quarantine enforcement, regulatory requirements and retirement of infested land from host crop production.

- b. New discoveries speed up identification of golden nematode. Until recently, in order to distinguish between cysts of the golden nematode and the tobacco cyst nematode, it was necessary to resort to a long and laborious process of culturing cyst nematodes on both tobacco and potato plants. Microscopic morphological differences have now been discovered which make it possible to separate the two.

4. Gypsy moth control.

- a. Gypsy moth control program accelerated. The adult trapping and egg survey in 1955 indicated spread of the gypsy moth farther to the west and south, adding about 8-3/4 million acres to the then known infested area. Figure 14 shows the areas of infestation. To meet the threat of additional spread supplemental funds in the amount of \$322,220 were made available for fiscal year 1956 so that about 627,000 acres were air-sprayed with DDT in late May and early June 1956 along the New Jersey, New York, and Pennsylvania border area. There were also approximately 99,000 acres sprayed in the Lansing, Michigan, area in cooperation with the State. Massachusetts sprayed 120,000 acres, most of which was in the general vicinity of Cape Cod. Connecticut sprayed 16,000 acres; Maine, 200 acres; Vermont, about 3,400 acres; and Rhode Island about 15,000 acres. For fiscal year 1957 a total of \$2,795,200 was made available to meet the expanded cooperative program. This program contemplates the eventual eradication of the gypsy moth, possibly in 8 or 10 years. States have been advised that as a group they will be expected to match Federal expenditures.
 - b. Gypsy moth quarantine revised. The Federal gypsy moth quarantine was revised effective July 20, 1956, to add to the regulated area that part of eastern New York newly infested in 1954 and 1955, as well as small additional areas in Connecticut, Maine, and Vermont. The revised quarantine provides simplified procedures for regulating movement of pulpwood and stone and quarry products.
5. Hall scale eradication area again extended slightly. In the continued effort to eradicate Hall scale from California, crews applied 4,982 pounds of liquid hydrocyanic acid gas under tents to 6,560 hosts on 1,161 properties in the Oroville, Davis City, Bidwell Park, Stilson Canyon and the Chico City areas of infestation during the fall and early spring of 1955-56. Oroville City, Stilson Canyon, and a large portion of the Bidwell Park area have received their third and final

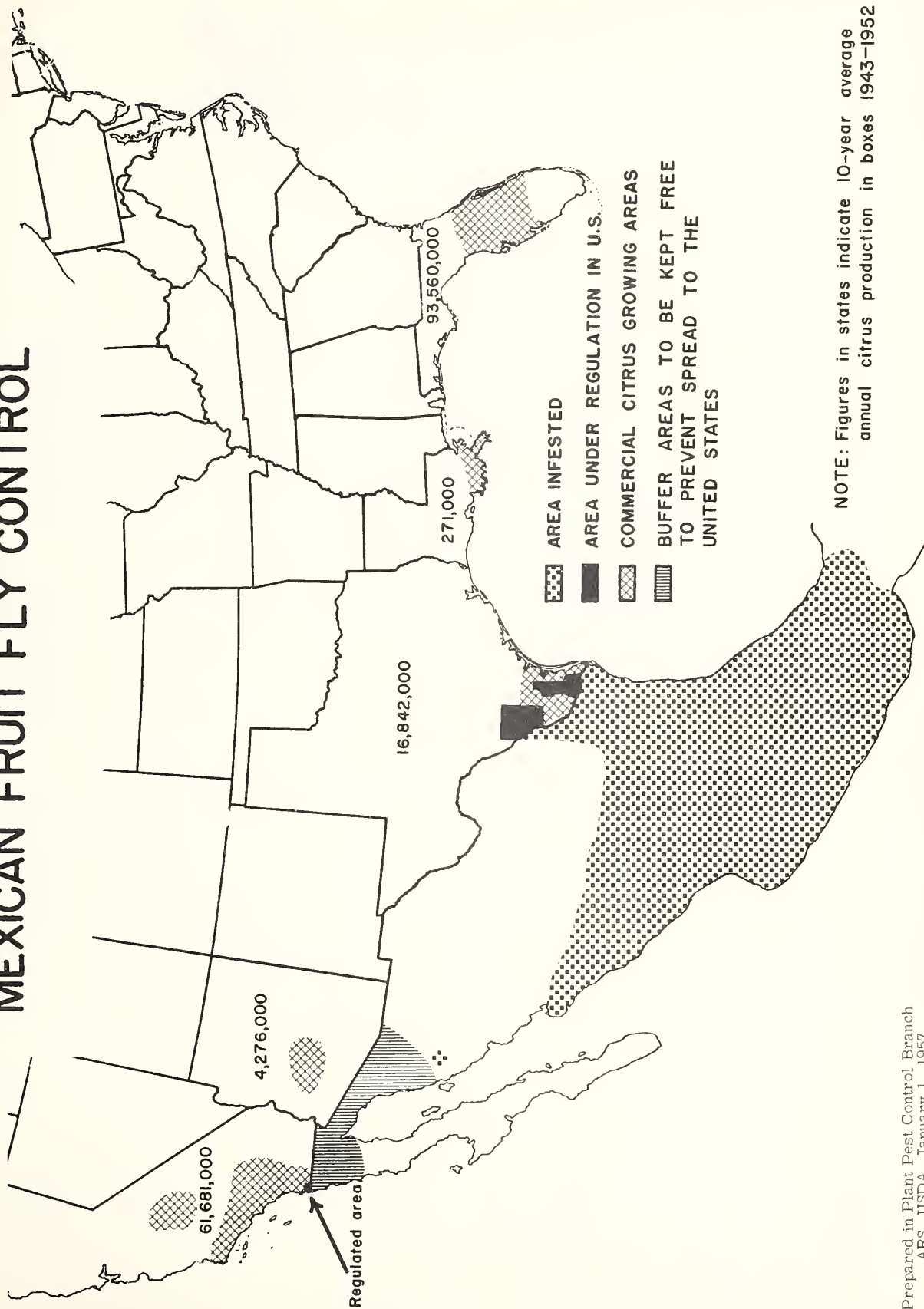
CITRUS BLACKFLY CONTROL



NOTE: Figures in states indicate 10-year average annual citrus production in boxes 1943-1952

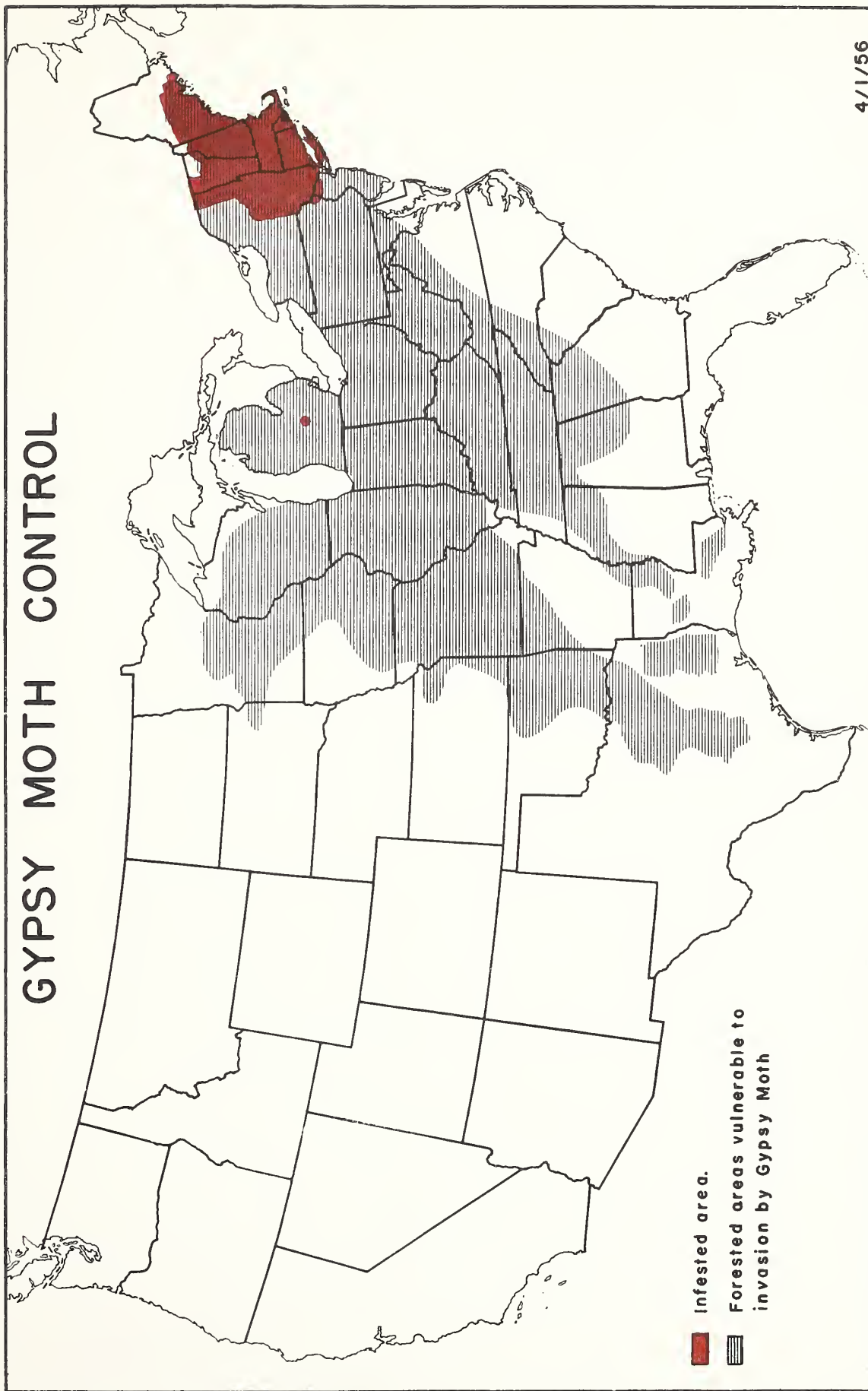
Figure 12

MEXICAN FRUIT FLY CONTROL



NOTE: Figures in states indicate 10-year average annual citrus production in boxes 1943-1952

GYPSY MOTH CONTROL



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Figure 14

fumigation. The removal of 683 trees has reduced further treatment needs. Work in Davis City was extended because of a new infestation found in June 1956. Intensive inspection was extended to 1,615 properties involving 49,678 hosts adjacent to recently-found infested properties, with no further Hall scale findings. As of October 31, 1956, there remains a total of about 2,000 host trees to be fumigated in the Chico infestation and a much lesser number in the Davis City infestation.

6. Cooperative economic insect survey reports prove valuable. Interest and participation in the cooperative economic insect survey program continue to increase. More than 600 agricultural workers throughout the country and territories submitted reports on insect conditions during the past year. The Cooperative Economic Insect Report which compiles the various State reports on a national basis was sent weekly on request to more than 2700 entomologists and other agricultural workers in all of the 48 States and several foreign countries. Favorable comment on the value of the Report to agriculture has continued to be received in increasing volume. As of June 30, 1956, 26 States had signed cooperative agreements providing for survey entomologists operating under a joint Federal-State financial arrangement. Four additional States had cooperative agreements in various stages of development. During the year, 43 States provided lists of the more important insects within the State. Reports summarizing insect conditions were received from 42 States as well as several foreign countries. Reports were also received from plant quarantine inspectors on some of their more important interceptions of insects not known to be in this country. The program strengthens the network of entomologists and other agricultural workers which can be called upon in case of emergency need.

7. Insecticide, Fungicide, and Rodenticide Act.

- a. Certification activities increase sharply under Public Law 518. Certification by this Department as to the agricultural usefulness of a pesticide chemical and USDA's opinion as to the residue likely to result from the proposed use of the chemical are prerequisites to obtaining tolerances for pesticide chemicals. Tolerances are established by the Food and Drug Administration. In fiscal year 1956, 52 petitions for tolerances were received, and the Department certified as to the usefulness of 46 chemicals for all or part of the uses proposed. This compares with 18 petitions for tolerances received in fiscal year 1955 and 11 certifications issued. Five petitions for temporary tolerances in conjunction with requests for experimental permits under the Federal Insecticide, Fungicide, and Rodenticide Act were processed. However, many uses of

these materials previously registered for these chemicals were not included in petitions received. It is also to be noted that there are many chemicals requiring tolerances for which petitions have not yet been submitted.

- b. Decrease in registration activities in 1956. Registration activities decreased slightly in 1956 from the preceding year. This was probably due to the emphasis which the industry and land grant colleges have given to clarifying the status of existing materials under P.L. 518, the Miller Pesticide Residue Amendment.

Registrants of products registered in 1951 were notified that the 5-year registration period for these products had expired. They were asked to specify whether they wished to have these registrations extended for an additional 5-year period. As a result of this review, 6,392 registrations were canceled. Table II which follows summarizes the registration activities.

- c. Review of registered pesticides underway. The Department is making a survey to determine the status under P.L. 518 of the uses of pesticide chemicals which are active ingredients in products registered under the Federal Insecticide, Fungicide, and Rodenticide Act. This survey will determine (1) whether or not residues result from these uses; (2) if residues result, whether a tolerance has been established, and, if established, whether the tolerance is adequate; (3) if the tolerance is inadequate or if there is no tolerance, the remedial action that is necessary to bring these uses into compliance with P.L. 518. The survey will include a review of more than 17,000 products registered for a myriad of raw agricultural commodity uses, and will ultimately include about 200 pesticide chemicals. The results will be of inestimable value to growers, land grant colleges, State and Federal agricultural research scientists, and State regulatory officials, in guiding their operations in the 1957 growing season and in subsequent years.
- d. Federal-State enforcement activities intensified. Co-operation between Federal and State enforcement groups continues to be excellent. Liaison between these groups and research agencies, both Federal and State, was appreciably intensified during the year in a mutual effort to clarify the status of materials under P.L. 518.

A total of 1222 pesticide chemicals were examined during the year of which 339 or 28% were found to be seriously misbranded, adulterated, or otherwise in violation of the Act. Seizures were made of 13 of these products.

TABLE II

Registration Activities

Activity	1952	1953	1954	1955	1956	(Est.) 1957	(Est.) 1958
Submissions received <u>1/</u>	17,275	19,906	21,098	16,917	15,532	15,000	15,000
Carryover from previous year	269	394	435	311	325	300	300
Total submissions requiring action	17,544	20,300	21,533	17,228	15,857	15,300	15,300
<u>Registrations:</u>							
Original registrations	2,761	3,536	4,002	4,300	3,965	4,000	4,000
Supplemental registrations	4,853	5,325	7,419	3,202	2,465	3,000	3,000
Total registrations	7,614	8,861	11,421	7,502	6,430	7,000	7,000
Registration Correspondence <u>2/</u>	14,721	17,086	18,208	17,915	16,124	16,000	16,000
Pending at end of year	394	591	304	311	488	300	300

1/ Includes original submission, submissions of corrected labeling and supplemental submissions in instances where the originally registered products were in some manner changed after registration.

2/ Previously designated as "Letters of Criticism Written."

There follows a summary of enforcement activities.

Summary of Enforcement Activities

Activity	1952	1953	1954	1955	1956	(Est.) 1957	(Est.) 1958
Samples Examined:							
Not previously sampled	1,034	1,132	1,134	960	783	800	800
Old products	1,051	1,178	667	587	439	500	500
	2,085	2,310	1,801	1,547	1,222	1,300	1,300
Violations (Mislabelled and/or adulterated products)	572	454	411	395	339	350	350
Actions taken on violations:							
Warnings	102	113	125	113	125	130	130
Citations	399	291	242	259	201	225	225
Seizures	71	51	44	23	13	20	20
Prosecutions	10	5	5	19	0	3	4

8. Japanese beetle control.

- a. New treatment developed against Japanese beetles in Zoysia grass-sod. The rapid development of the Zoysia grass-sod business in the Japanese-beetle-infested area has created a quarantine problem on shipments moving into nonregulated areas. A treatment has been developed during the spring of 1956 using ethylene dibromide-chlordane as a fumigant and insecticide to make shipments safe.
- b. The Federal regulated area of Japanese beetle control remained unchanged during the fiscal year. (See Figure 15)

9. Phony peach and peach mosaic eradication.

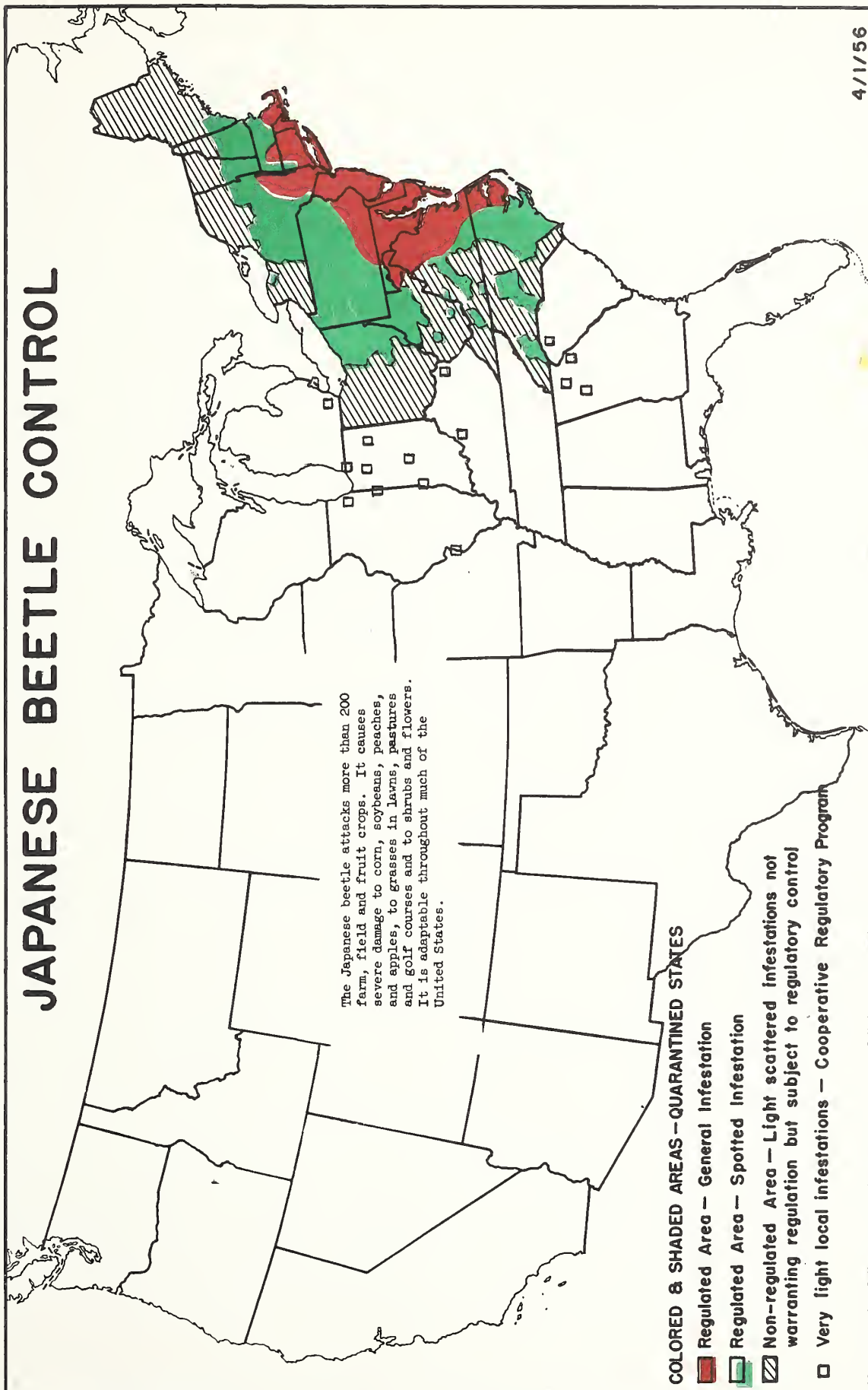
- a. Control activities for phony peach disease are effective. Overall infections in the Southeastern States continued at less than one percent. It was particularly gratifying that infections in Alabama and Georgia, the two most severely affected states, ran only about 1.1 percent. This was the lowest infection in Alabama since 1944 and in Georgia since 1942. All proposed peach nursery planting sites were inspected as required by the State quarantines. Surveys were made in the important commercial areas of Spartanburg and surrounding counties in South Carolina, and in Dunklin County, Missouri. Infection continued to be low in these counties with no increase in disease incidence. Wild plums in the peach-growing

JAPANESE BEETLE CONTROL

The Japanese beetle attacks more than 200 farm, field and fruit crops. It causes severe damage to corn, soybeans, peaches, and apples, to grasses in lawns, pastures and golf courses and to shrubs and flowers. It is adaptable throughout much of the United States.

COLORED & SHADED AREAS—QUARANTINED STATES

- Regulated Area — General Infestation
- Regulated Area — Spotted Infestation
- Non-regulated Area — Light scattered infestations not warranting regulation but subject to regulatory control
- Very light local infestations — Cooperative Regulatory Program



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areas of the Southeast are generally infected with phony disease, and an important part of the program at present is the destruction of these wild hosts with herbicides, which in many instances the growers are doing on an area wide basis. (See Figure 16).

- b. Peach-mosaic control shows marked progress. In 1955 Department research workers discovered a mite which proved to be the vector of peach mosaic. A survey is being conducted for this vector in all areas in the country in which peach mosaic is or has been known to occur. Some 50 orchards, comprising about 5,000 trees, are now being treated experimentally in an attempt to control the mite and indirectly the disease. It is believed that control of the vector may facilitate control of the disease by individual orchardists at moderate cost. Blanco County, Texas, and San Juan County, Utah, where peach mosaic has not been found for three years, have been released from quarantine. The status of the peach mosaic control program is shown in Figure 17.

10. Pink bollworm control.

- a. No extension of pink bollworm regulated area through November 10, 1956. No new areas of infestations of the pink bollworm were reported for the 1955 crop and none has been found so far this crop season although the surveys are nearing completion in such important areas as the delta regions of Arkansas, Louisiana, and Mississippi. Figure 18 shows the pink bollworm quarantined and infested areas. Inspection of the crop in the regulated area of Texas indicates little crop damage resulted in most of South Texas. However, drought in much of Texas resulted in a short, early maturing crop except where irrigation was available. Consequently, late maturing bolls on irrigated cotton throughout central, western and north-western Texas became heavily infested with pink bollworms with resultant damage. A number of light infestations of pink bollworm are apparently established in both western Arkansas and western Louisiana. Infestation has become general in Oklahoma and some damage is reported from limited areas.
- b. Mandatory cultural practices required in 152 counties. The addition of twenty-four counties in east-central Texas to the group in which mandatory field clean-up is required in 1956 is very timely in meeting the situation arising from heavy infestations in late maturing irrigated cotton. Likewise, growers in El Paso County have formally petitioned the Texas Commissioner of Agriculture to require stalk destruction in order to reduce infestation.

- c. Adoption of new methods saves cotton growers and industry 1.5 million dollars annually. Heating cottonseed as a regular part of the ginning process in Texas and New Mexico was discontinued, based on conclusions reached after a three-year cooperative research study which showed that most of the pink bollworms are killed during modern ginning procedures. This action will save the growers and industry about 1.5 million dollars a year.
 - d. Treatment of okra shipments proves successful. A treatment for green, edible okra has been devised to prevent spread of pink bollworm through infested shipments. Supervision was given the construction and operation of five refrigerated chambers for the treatment of green, edible okra with methyl bromide for movement from Texas to other cotton producing states. Over 20,000 bushels have been successfully treated and shipped.
11. Sweetpotato weevil control.
- a. Comprehensive sweetpotato weevil survey discloses infestations. During F.Y. 1956 a comprehensive survey in the Southeast resulted in the finding of weevils in 22 additional counties and in 8 counties having a previous record of infestation. A total of 2,460 new properties were found infested in the States of Alabama, Florida, Georgia, Louisiana, Mississippi, and South Carolina. During the year, 1,840 properties were freed of infestation. In addition, since June 30, 1956, 441 properties have been found infested and 258 freed from infestation. As of October 31, 1956, there were 4,455 infested properties as follows: Alabama, 234; Florida, 584; Georgia, 422; Louisiana, 2,833; Mississippi, 371; and South Carolina, 11. Figure 19 shows the status of the sweetpotato weevil control.
 - b. Insecticides materially reduce weevil infestations in native wild host plants. The most difficult problem in eradicating the sweetpotato weevil has been the control of the weevil in native wild host plants. In 1955 weevil infestations were general in the numerous wild host plants in the Boyce, Chambers, and Bunkie areas of Louisiana. Following one year of insecticidal control, weevils were found in only four locations at Boyce and three at Chambers, and the infestation at Bunkie has been reduced by possibly 75 percent.
12. White-fringed beetle control.
- a. White-fringed beetle infestations found in new areas. Surveys during fiscal year 1956 added some 40,000 additional acres infested with white-fringed beetles, mostly representing extensions of generally infested areas. As

PHONY PEACH CONTROL

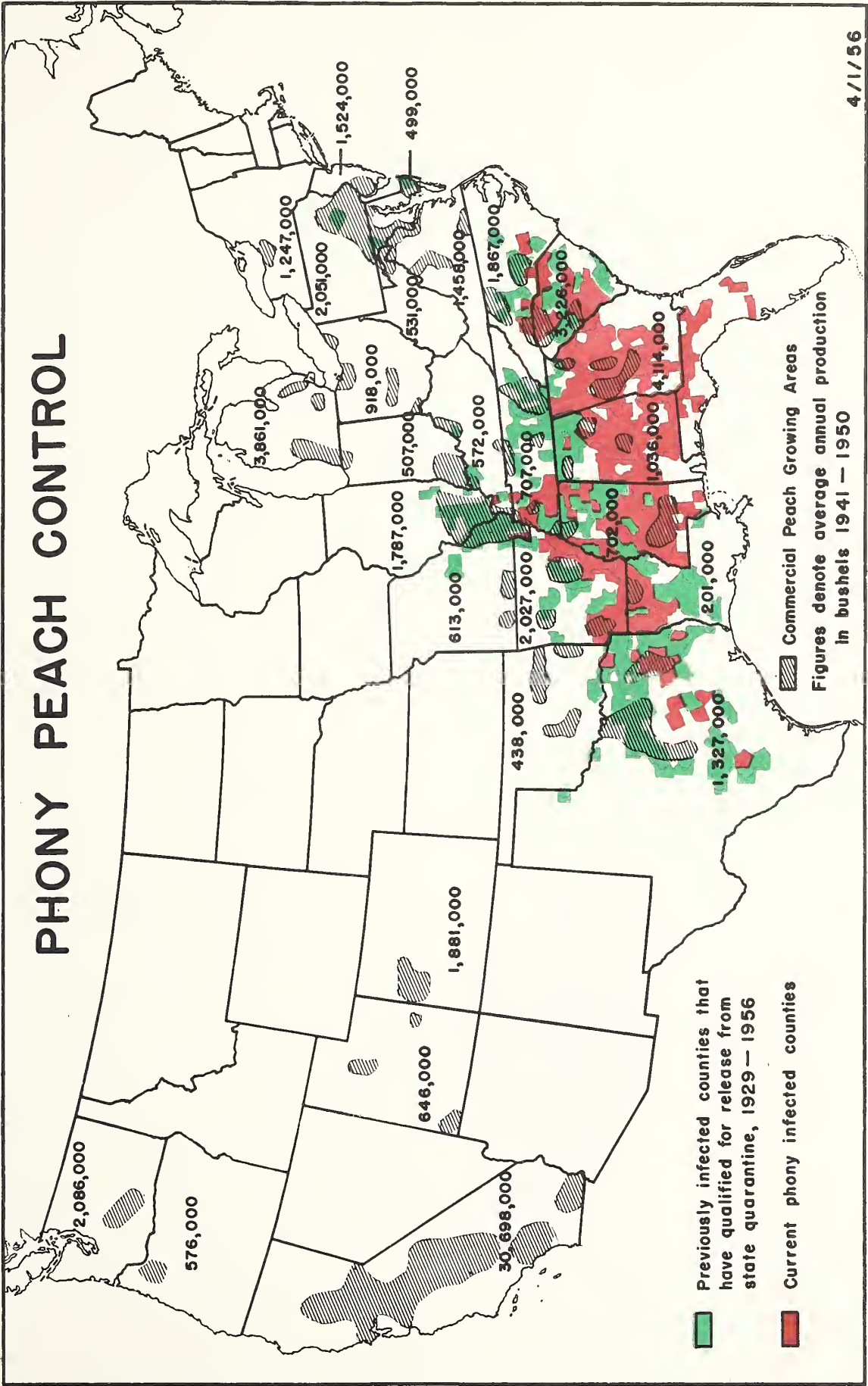
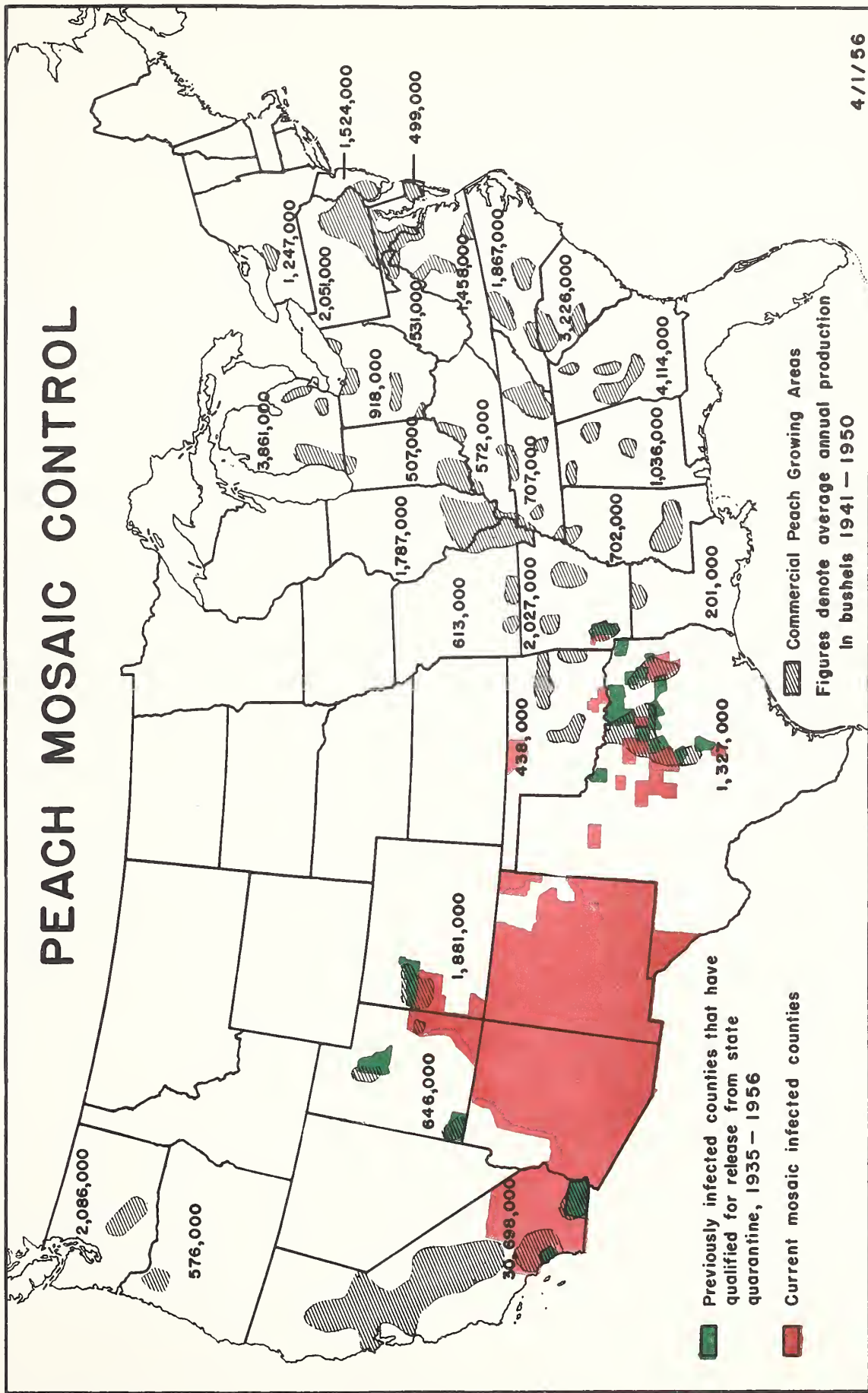


Figure 16

PEACH MOSAIC CONTROL



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Figure 17



PINK BOLLWORM CONTROL

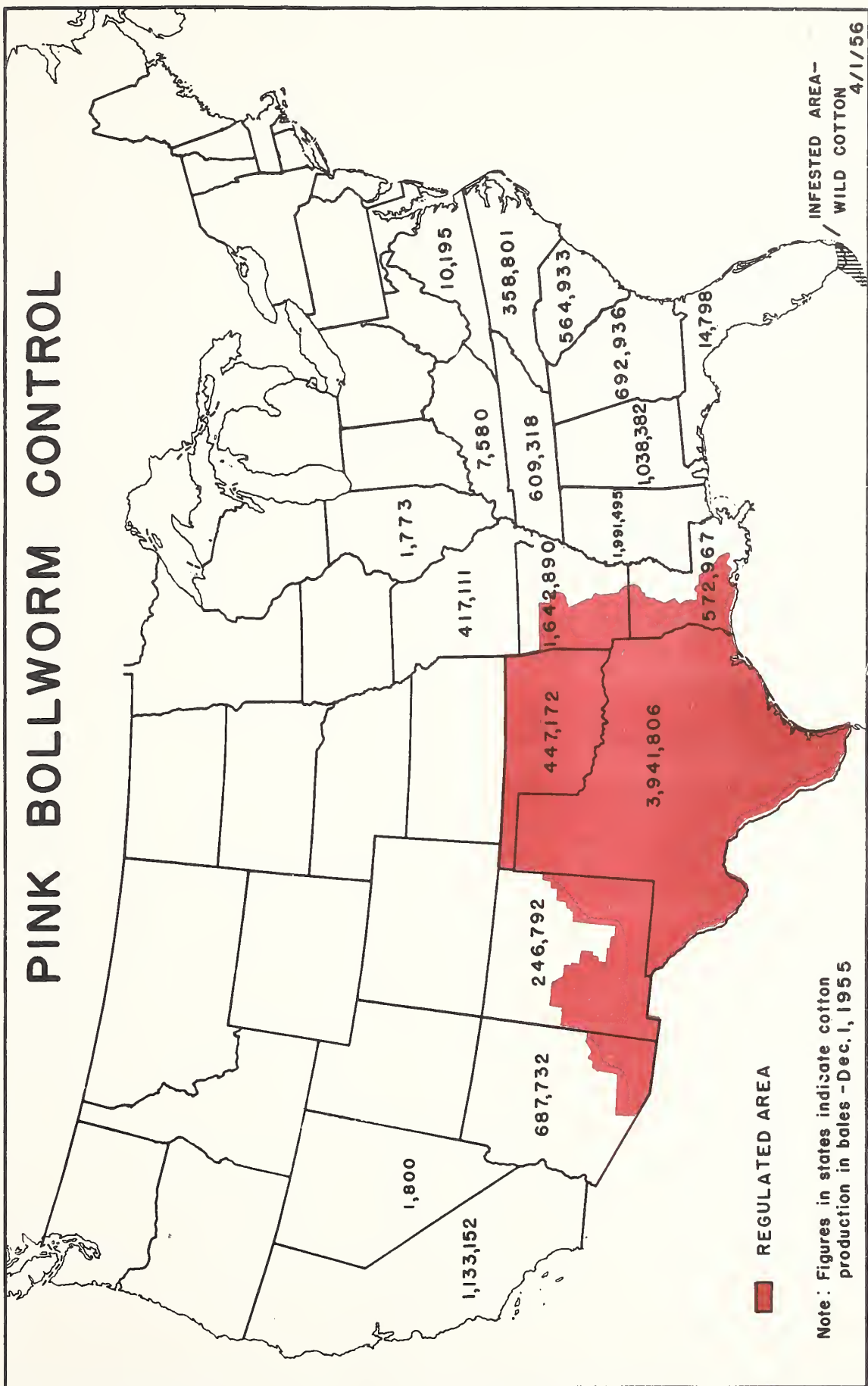
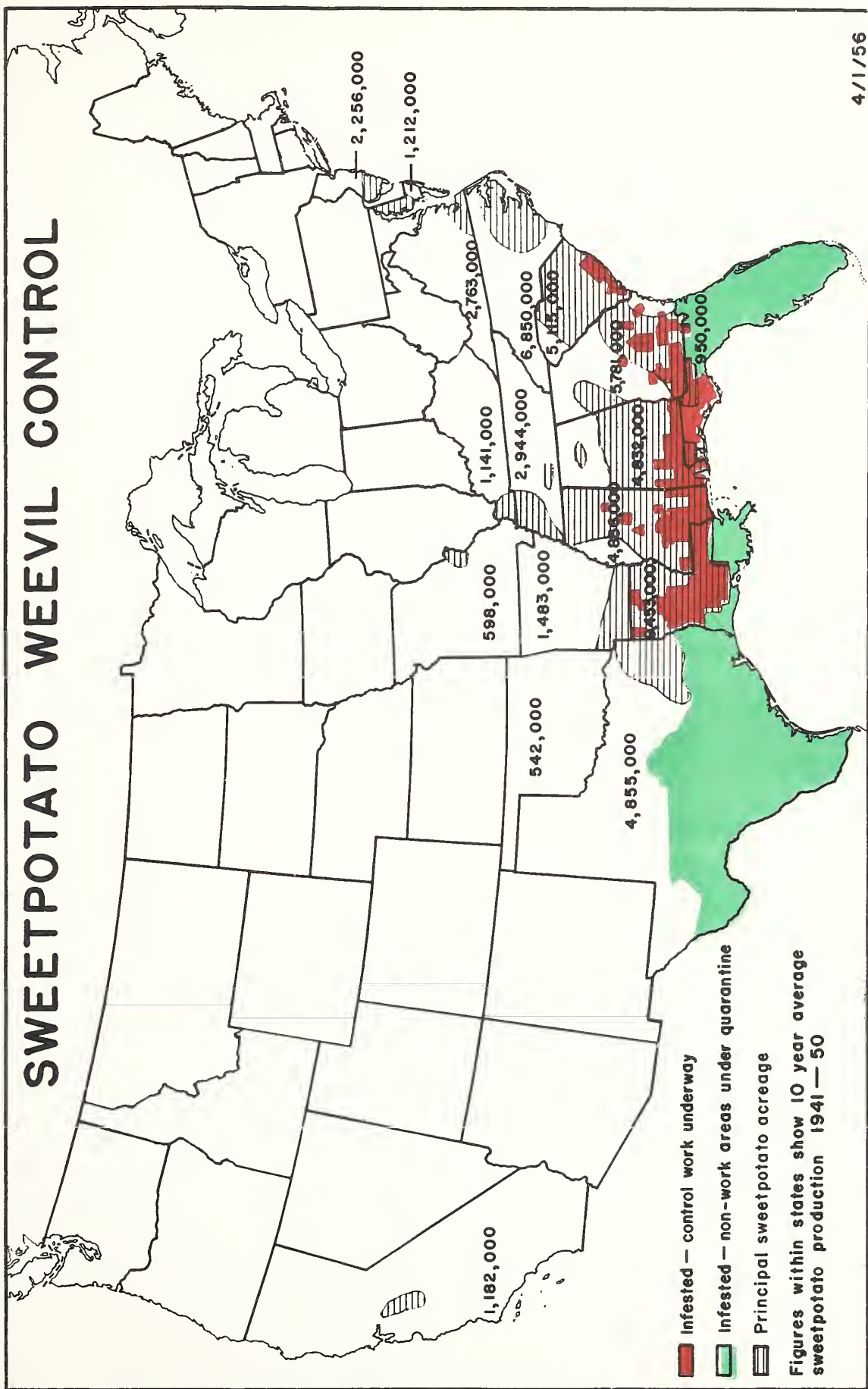


Figure 18

SWEETPOTATO WEEVIL CONTROL



Figures within states show 10 year average sweetpotato production 1941—50

Figure 1c

of June 30, 1956, there were some 510,000 acres classified as infested in 191 counties in Alabama, Florida, Georgia, Louisiana, Mississippi, New Jersey, North Carolina, South Carolina, and Tennessee. However, in 1956, no specimens were found on 155,040 acres or 34 percent, light populations were recorded on 47 percent, moderate populations on 15 percent, and only 4 percent supported heavy populations. Figure 20 shows the areas involved.

- b. Treatments provide white-fringed beetle control over large areas. During the year, approximately 1,328 acres of nursery land, 9,000 acres of farmland, and 15,000 acres of nonfarmland received soil treatments. An additional 10,000 acres of farmland were treated with insecticide-fertilizer mixes, bringing the accumulative totals since 1946 to 6,444 acres of nursery land, 155,392 acres of farmland (all types of applications), 39,898 acres of nonfarmland, and more than 1,000,000 aggregate acres of foliage treated. As of June 30, 1956, treatments leading to eradication had been applied to all known infested areas in 46 counties. The program for 1957 calls for the treatment of all known infested lands in 36 additional counties.

13. Burrowing nematode. The burrowing nematode has been found in 1,071 groves, 345 nurseries, and 123 miscellaneous properties in 33 counties in Florida. The Federal and State field work is closely coordinated, with the Department devoting special attention to survey and laboratory processing of samples, while the State concentrates on the removal of infested groves and treatment of soil. The State Plant Board of Florida has removed trees on 357 properties in 9 counties and has treated more than 3,095 acres of such land with the objective of continuing this type program until all affected groves have been treated.

In the fiscal year 1956 the survey for the burrowing nematode was carried on in citrus-growing areas of California, Texas and Louisiana. Since certain ornamentals are hosts of the burrowing nematode, these surveys include greenhouses and nurseries as well as citrus plantings. Ornamentals in two greenhouses were found infested at New Orleans, Louisiana; none was found in California or Texas.

14. European chafer. Some of the treatments for Japanese beetle quarantine certification are suitable for the European chafer. Other treatments are being tested in cooperation with shippers under careful observation and supervision to insure effectiveness against the chafer but without plant damage.

Extensive research has been under way for several years in an effort to develop improved survey procedures. The nature of the pest, its brief flight period, and lack of response to trap attractants have thus far seriously interfered with the development of a satisfactory survey method.

During fiscal year 1956 no new infestations were found in the infested States of Connecticut and West Virginia or in any of the non-infested States. In New York some extensions of known infested areas were found, and one newly infested property consisting of 50 acres was found outside the regulated area in Oswego County. The entire area in Oswego County received treatment with dieldrin at the rate of 3 pounds per acre. At Niagara Falls, 65 acres were similarly treated. The New York State Thruway Authority applied dieldrin to a 27 mile strip of roadway between Waterloo and Rochester. In Ontario and Wayne Counties (New York) most fields of winter grain showed some grub damage and about 20 percent of the fields had damage amounting to 15-25 percent.

In 1957 the three infested States of New York, Connecticut, and West Virginia will participate in survey, control, and quarantine enforcement to the extent of \$63,500. Industry in New York will also spend some \$50,000 in treatments and quarantine compliance. The noninfested States will cooperate in surveys with total State expenditures of \$15,000.

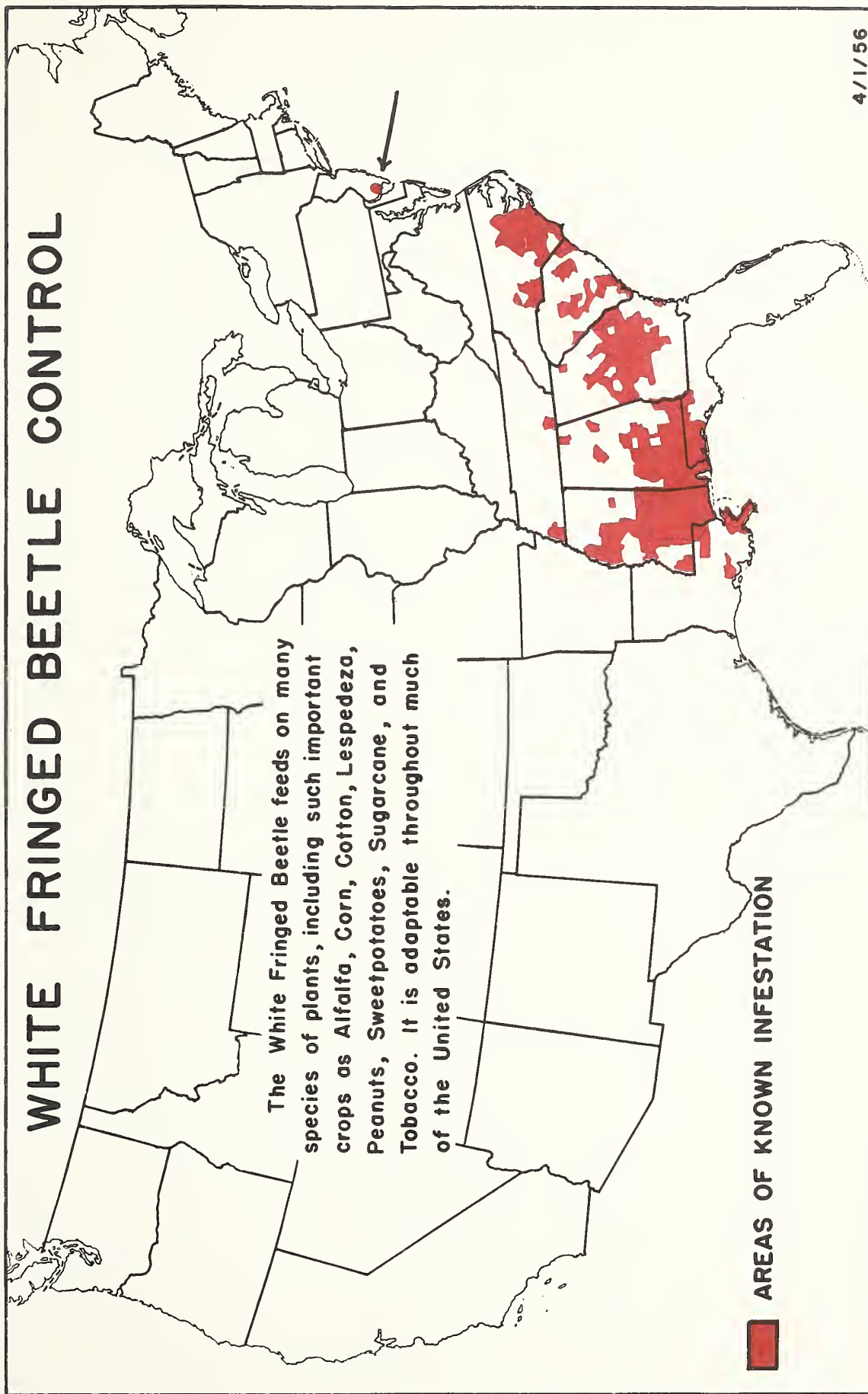
15. Grasshopper and Mormon Cricket Control.

- a. Surveys for grasshoppers on cropland. Grasshopper infestations on croplands were serious in many areas during the crop season of 1956. Federal personnel worked with local agricultural officials and farmers in outlining problem areas and advising on the most suitable insecticide to be used and the method of application. Preliminary reports from several cooperating states show that the area treated at farmers expense this year will approximate $6\frac{1}{2}$ million acres. Surveys in the fall of 1956 indicate that about 13 million acres of cropland in 17 states from Michigan to and including Washington on the west will be subject to outbreaks in 1957. Outlook maps and reports of probable problem areas are being prepared for distribution to county agents and other agricultural advisers.
- b. Rangeland grasshoppers continue to build-up in drought areas. Cooperative grasshopper control work was done on 2 million acres of rangeland during the crop season of 1956. (See Figure 21). The work was confined to areas where the States and the ranchers were willing to assume two-thirds of the cost of control or to areas of public lands where control by the Federal Government was necessary to protect

WHITE FRINGED BEETLE CONTROL

The White Fringed Beetle feeds on many species of plants, including such important crops as Alfalfa, Corn, Cotton, Lespedeza, Peanuts, Sweetpotatoes, Sugarcane, and Tobacco. It is adaptable throughout much of the United States.

 AREAS OF KNOWN INFESTATION



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This

RANGELAND GRASSHOPPER CONTROL LOCATION & SIZE OF AREAS COOPERATIVELY TREATED MAY - SEPTEMBER 1956

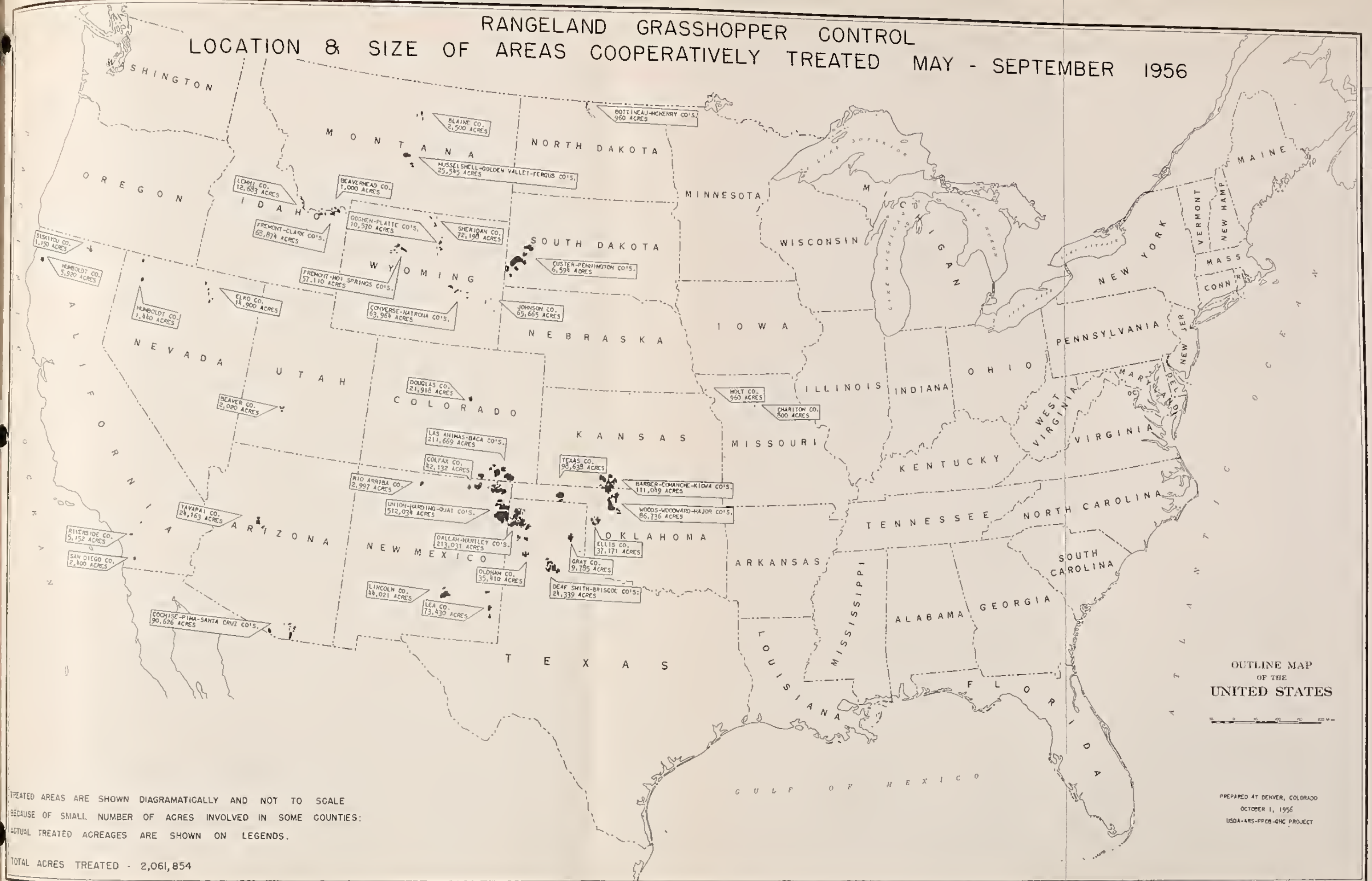


Figure 21

contiguous areas treated by private landowners. There were many areas with threatening populations where no control work was done and other areas where only the heavier infestation centers were controlled. The continuation of the drought in 1956 contributed to a serious build-up and spread of infestation in many areas of the Western States. Cooperative surveys just completed show a potentially serious rangeland infestation on some 22 million acres in 18 states for 1957.

The acreage treated in 1956 compared with the acreage treated in 1955 is as follows:

<u>State</u>	<u>Acreage Treated 1955</u>	<u>Acreage Treated 1956</u>	<u>Heavy Adult and Egg Population - Fall 1956 Survey (Acres)</u>
Arizona	73,383	114,789	2,720,000
Arkansas	-	-	230,000
California	-	14,622	1,137,000
Colorado	-	233,587	1,195,000
Idaho	40,389	81,557	235,000
Kansas	-	111,049	2,045,000
Missouri	-	1,760	-
Montana	34,978	29,045	3,007,000
Nebraska	-	-	1,052,000
Nevada	10,220	16,340	28,000
New Mexico	458,003	674,614	2,504,420
North Dakota	-	960	578,000
Oklahoma	148,239	222,545	1,120,000
Oregon	91,071	-	303,000
South Dakota	-	6,594	230,000
Texas	508,662	282,565	4,828,000
Utah	32,404	2,020	130,000
Washington	49,950	-	19,000
Wyoming	200,879	269,807	827,060
Totals	<u>1,648,178</u>	<u>2,061,854</u>	<u>22,188,480</u>

- c. Mormon cricket infestations decline in some areas. A total of 55,747 acres of infested rangeland was baited in five western states for the control of Mormon crickets in 1956. This is a considerable reduction from 1955 and 1954 when the treated area involved 95,663 and 121,508 acres respectively, and a marked reduction from the 618,000 acres treated in 1953. The intensity of the infestation continues to decline in Nevada, Idaho, Colorado and Utah; although there has been a definite upsurge and a considerable increase in the populations in some areas of Wyoming where failure to treat in 1955 and 1956 permitted a build-up. The acreage treated by states in 1956 is as follows:

<u>State</u>	<u>Acreage Treated</u>
Colorado	2,464
Idaho	3,080
Nevada	8,624
Utah	34,064
Wyoming	7,515
Total	55,747

16. Marked progress made in khapra beetle eradication. Since the inception of the khapra beetle inspection program early in 1955 some 41 thousand properties in 35 states have been inspected and more than 18,000 of these have been checked 2 or more times. No established infestations have been found outside of Arizona, California, and New Mexico where the insect was known to occur at the time the eradication program was undertaken. The status of the khapra beetle program is shown in Figure 22. The fumigation of infested premises for the eradication of khapra beetle is progressing satisfactorily.

The following table reflects the progress of this work by states as of November 1, 1956:

<u>State</u>	<u>Infested</u>		<u>Treated</u>		<u>Remaining</u>	
	<u>No.</u>	<u>Prop. Cu.Ft.</u>	<u>No.</u>	<u>Prop. Cu. Ft.</u>	<u>No.</u>	<u>Prop. Cu.Ft.</u>
Arizona	125	52,500,000	89	33,242,773	36	19,257,227
California ...	279	75,380,000	263	72,344,968	16	3,035,032
New Mexico ...	5	415,400	5	415,400	-	-
Totals	409	128,295,400	357	106,003,141	52	22,292,259

In January 1956, in cooperation with the Mexican Department of Agriculture a survey was begun in the states of Sonora and Baja California. Of the more than 900 properties inspected in those states infestations were found on 38. The infested storages have a volume of 11,580,000 cubic feet. Thirteen properties with a volume of 3 million cubic feet have been treated and released from regulation. All of the infestations in the Republic of Mexico are within 20 miles of the international line. The Department is cooperating with the Mexican officials in a regulatory and fumigation program designed to effect eradication of all infestations.

17. Immediate action taken to eradicate Mediterranean fruit fly in Florida. An infestation of the Mediterranean fruit fly was found April 13, 1956 in the outskirts of Miami near the international airport. Twenty-five years ago, a similar infestation in the vicinity of Orlando was eradicated. Although immediate

KHAPRA BEETLE ERADICATION

The khapra beetle has been found damaging wheat, barley, rye, flax, peas, alfalfa, and sorghum in this country. It is known also to attack maize and rice. More than 6 billion bushels of these crops are produced annually in the United States. All of this grain or seed is placed in storage on or off the farm at some time before it is consumed. This insect, which builds up rapidly and resists ordinary control measures, has a high potential for spread to storage facilities throughout the United States.

Infestation found in
warehouses, mills, and
farm storages in 27
counties.

AREAS OF KNOWN INFESTATION

447 PROPERTIES INFESTED (U.S. & Mexico)
(140 million cu. ft. of storage volume)
370 PROPERTIES TREATED (U.S. & Mexico)
(109 million cu. ft. of storage volume)

Note: NUMBERS (Above line=sites infested, below
line=sites treated)

279
263

125
89

5
5

38
13

Figure 22

action was taken by the Department in cooperation with the Florida State Plant Board, infestations of varying degrees of size and intensity were discovered in 1956 in some 28 counties. The largest areas of infestation occurred in Broward, Dade, Palm Beach, Lee, and Pinellas Counties. The farthest north was in Lake County. In most instances these spots have responded satisfactorily to treatment. See Figure 23 for areas found to be infested.

The eradication of the Medfly in 1929-30 involved the removal and destruction of host fruits and vegetables in infested areas, and the intensive spraying of infested groves with ground machines. New methods, techniques, and materials are now in use. A malathion bait spray is applied to infested areas on a 7 to 10 day schedule, and as a soil insecticide is applied under infested host plants. Treatments have been developed which permit the safe movement of both fruit and vegetable crops produced within infested areas. A trapping procedure has been developed which is highly effective to determine areas of infestation and checking on effectiveness of control procedures. This employs the use of oil of angelica seed which is extremely attractive to the Medfly.

Since this program began in April 1956, more than 770,000 acres have been subjected to treatment one or more times. As of December 31, 1956 eradication has been accomplished on about 732,000 acres, leaving some 38,000 acres under treatment.

18. Soybean nematode quarantine established by State of North Carolina. The soybean cyst nematode occurs in New Hanover and Pender Counties, North Carolina, with Castle Hayne being the center of infestation. On 1,600 acres seventy-nine properties have been found to be infested. Inspections have been made in nearby areas in Virginia and South Carolina where bulbs and soybeans grow and at points to which farm tools and equipment have been moved from infested areas, but no infestations found. Agricultural authorities in other soybean-growing States have been alerted to make observations for otherwise unexplained damage in soybean fields and to record and report such damage, but no such suspicious areas were found infested during the fiscal year.

Soybeans have become a major field crop in many States, making it highly desirable to prevent this pest from spreading to Midwestern States. (See Figure 24 for soybean-producing areas).

In mid-November, 1956, a suspected infestation of soybean nematode was reported in a field located near Ridgely in Lake County, Tennessee, and it is now being investigated.

STATUS OF MEDITERRANEAN FRUIT FLY ERADICATION AND REGULATORY PROGRAM JANUARY 12, 1957

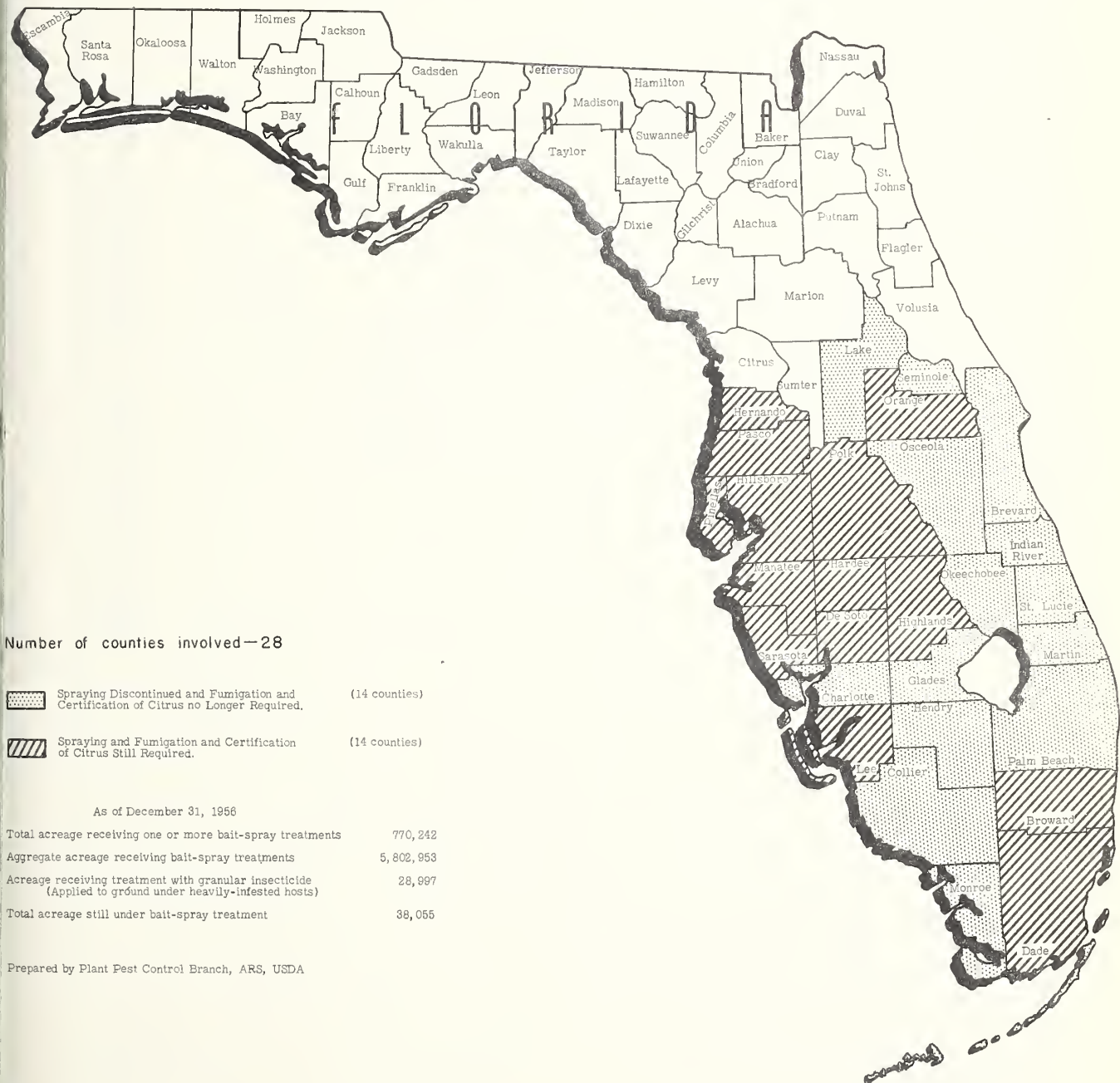
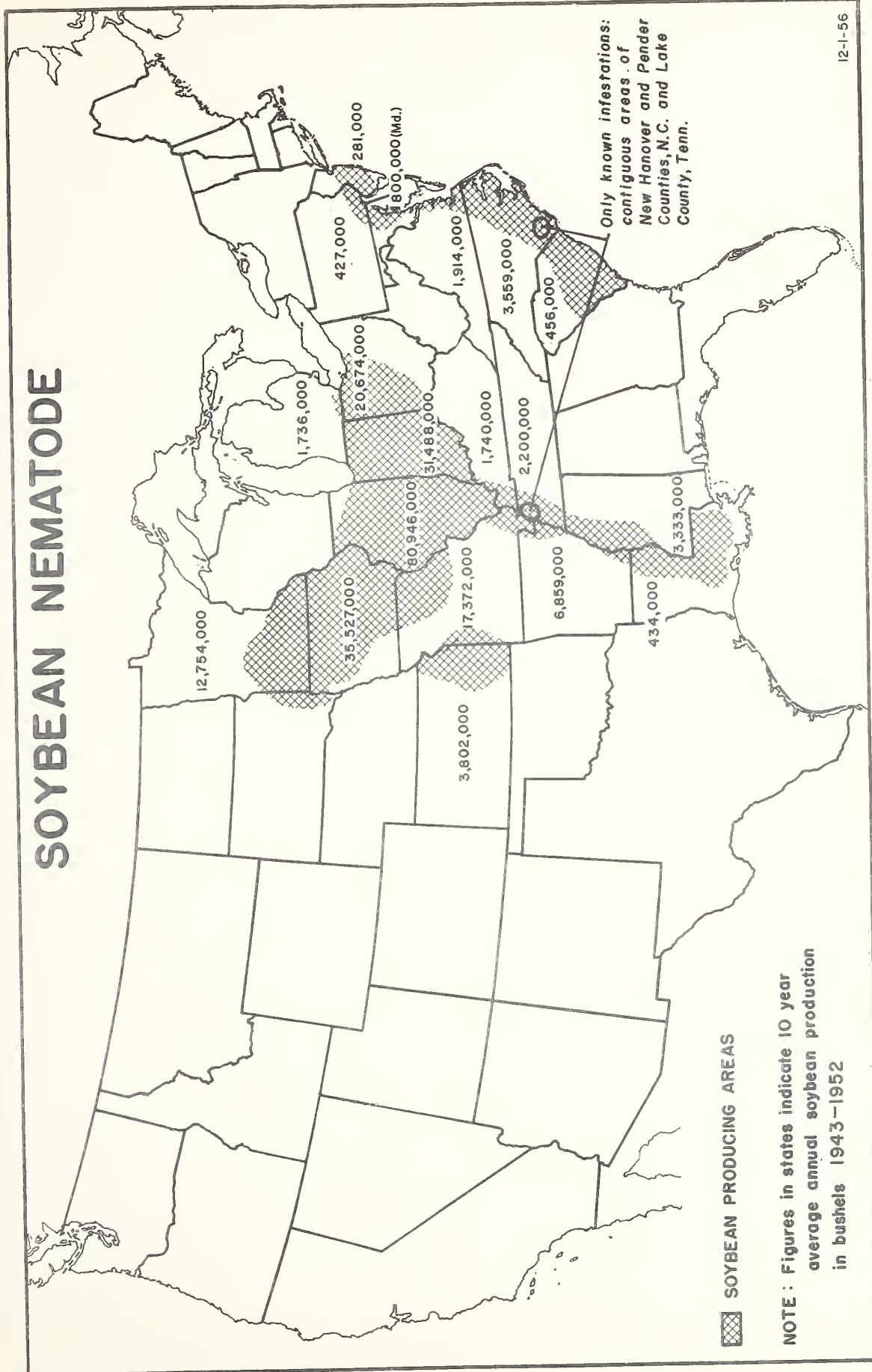


Figure 23

SOYBEAN NEMATODE



12-1-56

Figure 24

The Department has cooperated with State regulatory authorities in developing and enforcing a State quarantine to regulate movement of products or containers, equipment or machinery which might carry the nematode to new areas. This State quarantine became effective in May 1956. Soil, bulbs, containers, farm machines, and other material are permitted to move from infested farms only when treated to remove or destroy the nematodes.

19. Contingency fund for control of emergency outbreaks of insects and plant diseases. During fiscal year 1956 a total of \$1,650,000 was released from the Contingency Fund to enable the Department to participate in a number of emergency control programs. In addition, \$1,250,000 was made available from the 1957 appropriation, of which \$987,445 was obligated in 1956. In fiscal year 1957, \$6,900,000 including the \$987,445 obligated in 1956, was made available to meet emergency requirements.

For fiscal year 1958, it is proposed to change the nature of the Contingency Fund as explained previously in these Explanatory Notes. The programs which have been financed heretofore from the Contingency Fund in 1958 and future years will be provided for in the same manner as regular projects under this appropriation. For 1958 the Contingency Fund includes \$1,000,000 for unforeseeable incipient and emergency infestations.

Table III shows the use of the Contingency Fund for the fiscal years 1951 through 1957 (to 12/31/56).

TABLE III

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE

Releases from the Contingency Fund, for Control of
Emergency Outbreaks of Insects and Plant Diseases
Fiscal Years 1951 through 1957 (to 12/31/56)

Project	1951	1952	1953	1954	1955	1956	1957 to 12/31/56
Contingency Fund:							
Annual appropriation acts ...	\$1,250,000	\$1,000,000	\$1,000,000	\$600,000	\$400,000	\$1,000,000	\$4,000,000
Supplemental appropriation acts	- -	- -	- -	- -	650,000	650,000	2,500,000
Total appropriations for Contingency Fund	1,250,000	1,000,000	1,000,000	600,000	1,050,000	1,650,000	\$6,900,000
Releases for Control of Emer- gency Outbreaks of Insects:							
Grasshoppers and Mormon crickets	151,455	144,000	438,700	528,940	284,300	566,000	d/ 270,000
Burrowing nematode	- -	- -	- -	- -	35,000	150,000	b/ 250,000
European chafer	- -	- -	- -	- -	50,000	83,000	80,000
Khapra beetle	- -	- -	- -	- -	156,000	684,000	b/ 565,000
Mexican fruit fly	- -	- -	- -	- -	125,000	137,000	b/ 75,000
Soybean nematode	- -	- -	- -	- -	- -	30,000	50,000
Mediterranean fruit fly	- -	- -	- -	- -	- -	- -	a/ 4,675,000
Total releases	151,455	144,000	438,700	528,940	650,300	1,650,000	5,965,000
Balance in Contingency Fund ...	1,098,545	c/ 856,000	d/ 561,300	71,060	e/ 399,700	- -	935,000

a/ Includes \$1,250,000 which was immediately available in fiscal year 1956 for control of Medfly.

b/ Covers control operations for six months only.

c/ Includes \$37,800 not required for emergency insect control activities which was transferred to the item for control of vesicular exanthema to meet emergency needs.

d/ Includes \$500,000 not required for emergency insect control activities which was transferred to the item for control of vesicular exanthema to meet emergency needs.

e/ This balance was transferred, after the close of the fiscal year, to other appropriations to meet retroactive pay act costs pursuant to Public Law 123, 84th Congress.

Plant Quarantine:

1. Measures taken to strengthen baggage inspection. Congress provided an increase of \$800,000 in the Agricultural Appropriation Act for fiscal year 1957 to permit the Customs Service to return to essentially a complete inspection of baggage. Protection against the entry of foreign plant pests had been seriously weakened in 1953 when Customs adopted "spot check" examination of incoming passengers' baggage. Because of the finding of infestations of Mediterranean fruit fly near the Miami (Florida) International Airport, Customs reinstituted complete baggage inspection at that airport on May 10, 1956. During the following three weeks, the number of interceptions of plant material from baggage was 46 percent higher than during the preceding month when the "spot check" system was in effect. Interceptions at New York International Airport increased 172% the first month after complete inspection was resumed, illustrating the serious danger to agriculture of the inadequate "spot check" inspection. Since Customs resumed complete baggage inspection in fiscal year 1957, similar results are being reported from other ports.
2. Port of entry inspection supplemented. While it is recognized that there is no substitute for a strong port of entry inspection program to prevent the entry of new plant pests, additional emphasis is being placed on means to supplement inspection and thus obtain added protection. Steps have been taken to better acquaint the public with the existence of, and need for, agricultural quarantine restrictions. A short motion picture on the subject is being prepared which will be made available to television stations, transportation agencies, and other outlets. The Customs Service has revised its baggage-declaration form to include a conspicuous notice about agricultural quarantine restrictions. Other means of reaching the public are under study. More plant quarantine work is being done in some places abroad to prevent infested plant material from even starting to the United States and the possibility of extending this practice to still other areas is also being explored. New inspection personnel are given intensive training in both the technical and regulatory aspects of their jobs to insure the maximum effectiveness of the inspection staff.
3. Many of world's most destructive pests prevented entry into the United States. During the fiscal year 1956 plant quarantine inspectors intercepted approximately 17,500 lots of destructive plant pests at our borders. These included foreign insects, diseases, and nematodes that could attack virtually every important crop grown in this country. Fruit infested with the

Mediterranean fruit fly was intercepted 147 times. Among the other important pests intercepted were the golden nematode, khapra beetle, durra stem borer, citrus blackfly, citrus canker, Irish potato weevils, sweetpotato weevils, avocado weevils, the Mexican, oriental, and West Indian fruit flies, and the melon fly. Some of these pests have demonstrated that their control can be costly, even when established on a limited scale. The European corn borer, an introduced pest, is currently costing growers each year more than twice the amount that has been spent for foreign plant quarantine protection during the entire period the program has been in operation.

4. Measures taken to prevent northward spread of the Mediterranean fruit fly from Costa Rica. The danger of spread of the Mediterranean fruit fly from Costa Rica to both Mexico and the United States was brought to the attention of the Mexican agricultural officials during the past year. The most likely means of its spread is believed to be by infested fruits carried by air travellers. The Department has cooperated with the Mexican Government in a training program which is reflected in added protection to both Mexico and the United States, as well as in improved working relationships with Mexico. Should the Medfly become established in Mexico, its eradication there might be extremely difficult and the presence of the pest just south of the border would constitute a constant threat of its entry into the United States.

As a further safeguard against the spread of the Mediterranean fruit fly from Costa Rica to the United States, a survey was made in Central America to determine the extent to which the pest occurs in that area. Information was also gathered on other pest conditions which will be helpful in the sound administration of plant quarantine regulations affecting those countries. The survey was conducted on invitation of, and in cooperation with, agricultural officials of the countries concerned. An important byproduct of the survey is that it served to greatly improve relations with agricultural officials of the Central American countries, and will undoubtedly facilitate the solution of mutual plant quarantine problems that may arise in the future.

5. Steps taken to strengthen plant quarantine effort in Central America. With foreign travel, particularly by air, continuing its rapid expansion, the importance of strengthening and extending our first line of defense against foreign pests is becoming more apparent. This is especially true with respect to Latin America. It has been demonstrated repeatedly that when such pests as the pink bollworm, boll weevil, Mexican fruit fly and citrus blackfly reach northern Mexico it is

difficult, if not impossible, to prevent their natural spread across the border. Hence, the establishment of a new pest in Latin America represents a direct and serious threat to our agriculture. This threat is certain to become greater as traffic over the Pan American Highway increases.

For mutual protection, officials of Mexico and Central America are being encouraged to adopt stronger plant quarantine measures. During the past year arrangements were made for plant quarantine workers of Central American countries to undergo intensive training at the Plant Quarantine Training Center at New York. It is expected that upon completion of the course they will return to their respective countries and instruct others in this field. A plant quarantine official of El Salvador recently completed the training course and additional trainees from Central American countries will be sent to the school as rapidly as qualified candidates can be selected. The International Cooperation Administration is cooperating in this program.

6. Threat of nematode entry requires specialized training of inspectors. To overcome the shortage of trained nematologists, an intensive 6-weeks course of instruction was given to selected inspectors in the detection and determination of meadow, rootknot, burrowing, soybean, golden, and other nematode species of economic importance, as well as in the recognition and discard of the many interceptions of species of no quarantine importance. As a result of this training there will be increased protection against entry of these pests and handling of imports will be facilitated. The submission of hundreds of interceptions for identification, many of which were not of quarantine significance, will be eliminated.
7. Pre-departure clearance of movements of military aircraft and personnel to the mainland of the U.S. In 1956 a plant quarantine inspector, also trained as a Deputy Collector of Customs, participated in pre-departure agricultural quarantine and Customs clearance of movement of 4,000 troops by air from Japan to the United States. The experiment proved so successful that a similar procedure was subsequently followed with respect to three other mass movements of military aircraft from their Pacific bases to locations on the mainland. The U.S. Air Force and Military Air Transport Service, in cooperation with ARS and other civilian agencies concerned, are preparing a Standard Operating Procedure for such operations, based on the experience gained. The adoption of this procedure will increase quarantine protection at substantially less cost and, at the same time, improve military operations through elimination of landings for quarantine purposes, thus also reducing costs for the military.

8. Foreign traffic continues to expand and increase threat from foreign pests. The danger from foreign plant pests gaining entrance to the country continued to grow during fiscal year 1956 as the volume of foreign travel and commerce again surpassed all previous records. As yet there is no indication that the sharp upward trend in foreign traffic that began shortly after the end of World War II has reached its peak. During the past year the number of persons arriving by air increased by 20%. Published estimates by the Civil Aeronautics Authority indicate that this increase will be equally as great in 1958. As illustrated by the following comparative workload data, similar upward trends continue with respect to all other major plant quarantine activities.

Workload Data Fiscal Years 1955 through 1957

Item	F.Y. 1955	F.Y. 1956	F.Y. 1957 (Estimated)
<u>Inspection:</u>			
Airplanes, approximately 38% carrying unauthorized plant material in 1955 and 1956	89,205	97,351	110,000
Vessels, approximately 27% carrying unauthorized material	48,205	54,712	55,500
Cargo importations of plant material, under permit	68,586	77,617	81,500
Shipments of plant and plant products, inspected or treated, and certified for movement from Hawaii and Puerto Rico to the mainland	13,975	15,407	17,500
Containers of cut flowers and leis for movement from Hawaii to the mainland	457,283	474,645	500,000
Containers, plant material treated or cleaned	1,147,308	1,715,050	2,500,000
Freight cars from Mexico	85,768	101,167	115,000
Foreign mail packages	3,253,591	3,138,053	3,000,000
In cooperation with Customs:			
Vehicles from Mexico	15,240,649	17,262,188	20,000,000
Baggage, airborne, pieces of	4,592,254	5,880,433	10,000,000
Baggage with surface-borne passengers from Mexico	4,107,413	4,640,249	5,150,000
Baggage with ships' passengers, number of passengers	1,264,002	1,079,498	1,300,000
<u>Interceptions:</u>			
Unauthorized plant material, all sources	216,066	244,566	360,000
Lots of insects and plant diseases of plant quarantine significance, all sources	18,504	17,504	25,000
<u>Export certification:</u>			
Containers of domestic plants and plant products exported	12,688,479	23,459,525	27,500,000
Export certificates issued	34,784	45,470	51,000

ANIMAL DISEASE AND PEST CONTROL

Current Activities: Measures are devised to exclude from this country communicable animal diseases of foreign origin; to prevent the spread of such diseases through interstate shipments of livestock or distribution of impure or impotent veterinary biologics; to control and eradicate livestock diseases; and to maintain, through a marketing agreement with manufacturers and handlers, adequate supplies of hog cholera virus, serum and vaccine for protection of swine.

Selected Examples of Recent Progress:

Animal Disease Control and Eradication:

1. Progress continues to be made in tuberculosis eradication program.
 - a. Percentage of reactors increases. Due to intensified testing in areas disclosing evidence of infection above average, the percentage of reactors in cattle tested for tuberculosis increased from 0.12 percent during fiscal year 1955, to 0.15 percent during fiscal year 1956.
 - b. Tracings to herds successful. The tracing to herds of origin of animals reported as showing lesions of tuberculosis on post-mortem examination in Federally inspected slaughtering establishments continues as a valuable adjunct to regular field testing in locating tuberculosis infection. While there was a decrease in the number of cases reported, it was possible to trace successfully to origin 77% of the cases reported to field stations as compared to 70% for the previous year. A total of 862 reactors was disclosed as a result of testing 34,544 animals. An average of 7.4 reactors per infected herd was disclosed as a result of tests conducted under the tracing procedure as compared with an average of 2.15 reactors per infected herd disclosed on the routine field testing.
 - c. Animal identification and recording of movements through markets improved. Practically all failures to complete successfully tracing to herds of origin of lesion cases found in slaughtering plants can be attributed to either lack of proper animal identification or a lack of information on movements of animals through markets. Efforts to improve conditions in these areas include (1) requests that all cattle ear tags purchased by State or Federal agencies conform to the national ear-tagging plan which provides an identifying code for each State, (2) inauguration of a system for maintaining the identity of animals consigned to the market through the stockyards at Lancaster, Pennsylvania, which is the second terminal market that has adopted this system.

- d. Tuberculin now purchased from commercial sources. Arrangements were completed during the fiscal year to purchase all tuberculin from commercial sources. The Department has also conducted check tests of the commercially produced product with the former Government produced tuberculin to assure that the change-over could be accomplished without incident or without loss of confidence in the testing agent.
- e. A comparison of funds provided by the Federal Government and cooperating States and counties for the eradication of tuberculosis for fiscal years 1956 and 1957 follows:

	1956		1957	
	<u>Federal</u> <u>Government</u>	<u>Cooperators</u>	<u>Federal</u> <u>Government</u>	<u>Cooperators</u>
Operating funds	\$1,552,614	\$4,073,726	\$1,698,800	\$3,688,208
Indemnity payments .	<u>374,878</u>	<u>570,470</u>	<u>380,000</u>	<u>875,126</u>
Total ...	<u>1,927,492</u>	<u>4,644,196</u>	<u>2,078,800</u>	<u>4,563,334</u>

- f. Tables IV and V show the average Federal and State indemnity payments and other data pertaining to the program for control and eradication of tuberculosis.

2. Brucellosis eradication increased markedly.

- a. The fiscal year 1956 brought forth the greatest progress in eradication of brucellosis that has been made for many years. The additional funds provided by the Congress for continuing the accelerated brucellosis program permitted expansion of all activities considered essential for efficient program operation. The major part of the field work was carried out by practicing veterinarians employed on a fee basis. Special emphasis was placed on conducting area work or work leading directly to the establishment of area work.

On June 30, 1954, the last complete fiscal year prior to the acceleration of the brucellosis program, approximately 334 counties in 15 States and Puerto Rico had achieved modified-certified status. On June 30, 1956, 500 counties in 22 States and Puerto Rico were reported as modified-certified brucellosis free areas. Of the 3,148 counties in the United States, the percentage of certified counties increased from 10% on June 30, 1954, to 16% on June 30, 1956. As of June 1, 1956, compulsory area work was underway in 698 counties, and it is estimated that a total of 847 counties will be certified by July 1, 1957.

The tabulation below provides a comparison between fiscal years 1955 and 1956. Most encouraging is the fact that while there was an increase in all phases of the work, the percentage of infected herds and reactor cattle shows a decrease. The percentage of reactors slaughtered was considerably more in the fiscal year 1956 than in 1955. There was an increase in the number of certified counties and States. The certification of such areas is one of the most important measures or guides in program progress.

	<u>FY 1955</u>	<u>FY 1956</u>
<u>Brucellosis ring test -</u>		
Estimated cattle tested ...	20,444,994	28,361,691
Herds tested	1,200,898	1,727,581
Suspicious herds	278,847	255,503
Percent of suspicious herds	23.2	14.8
States using test	34 & Puerto Rico	46, Alaska & Puerto Rico
<u>Blood tests - cattle</u>		
<u>Tested</u>	14,186,241	16,754,195
Herds tested	984,541	1,154,962
Infected herds	143,690	156,406
Percent of infected herds .	14.6	7.7*
Reactors found	365,247	366,524
Percent of cattle infected.	2.6	1.25*
Reactors slaughtered	259,626	327,034
Percent of reactors slaughtered of those found	71	89

STATEMENT OF COMPARATIVE TESTING, HERDS AND CATTLE UNDER SUPERVISION, MODIFIED ACCREDITED AREAS
AVERAGE APPRAISAL, SALVAGE, AND STATE AND FEDERAL INDEMNITY IN TUBERCULOSIS ERADICATION WORK
FISCAL YEAR 1935 TO 1956 INCLUSIVE

Fiscal Year	Tests Conducted		Reactors found	Per- cent infec- tion	Under Supervision		Modi- fied accredi- ted areas*	Apprai- sal		Average during year		Federal Indemnity
	Herds	Cattle			Herds	Cattle		sal	Salvage	State in- demnity		
1935	2,378,668	25,237,532	376,623	1.5	6,590,863	48,768,627	2,428	\$57.55	\$15.19	\$15.87	\$18.70	
1936	1,944,624	22,918,038	165,496	.7	6,515,273	59,907,935	2,921	77.66	26.50	10.18	22.44	
1937	961,109	13,750,308	94,104	.7	6,745,471	61,640,711	3,030	86.04	28.94	12.20	22.72	
1938	1,007,586	14,108,871	89,359	.6	6,471,538	62,640,358	3,124	86.76	32.16	16.41	18.12	
1939	750,806	11,186,805	60,338	.5	6,372,720	60,439,030	3,142	89.01	34.49	18.96	15.97	
1940	819,408	12,222,318	56,343	.46	6,191,330	61,570,426	3,148	91.05	37.12	20.44	16.20	
1941	777,435	12,229,499	40,702	.3	6,235,198	62,696,167	3,151	96.50	40.99	20.95	16.48	
1942	681,504	10,983,086	28,008	.26	6,320,006	63,073,213	3,151	109.69	50.35	21.49	16.55	
1943	563,413	9,308,936	17,167	.18	6,317,670	63,846,496	3,151	135.19	65.03	27.50	18.75	
1944	524,927	8,894,466	18,338	.2	6,153,069	64,519,652	3,151	154.53	59.93	36.07	21.72	
1945	484,749	8,105,480	19,534	.24	6,120,528	64,790,921	3,151	161.32	59.78	40.31	22.71	
1946	505,296	8,454,463	19,464	.23	6,035,783	65,981,099	3,150**	174.20	69.00	37.26	23.89	
1947	515,517	8,312,919	16,666	.2	6,082,666	65,577,421	3,150	199.46	83.55	40.81	24.19	
1948	523,924	8,294,423	15,943	.19	6,044,170	66,246,215	3,150	234.60	119.74	38.53	23.90	
1949	536,162	8,737,501	17,007	.19	5,985,215	65,419,332	3,150	285.78	139.46	37.68	24.72	
1950	539,799	9,439,811	17,733	.19	5,991,703	65,443,353	3,150	272.87	123.24	43.40	25.05	
1951	503,933	8,847,228	12,353	.14	5,808,062	64,824,960	3,149***	323.70	174.64	43.59	24.92	
1952	488,769	9,164,265	10,351	.11	5,798,865	64,791,861	3,149	346.13	174.05	46.15	25.66	
1953	463,159	9,675,245	10,811	.11	5,688,183	67,423,940	3,149	309.47	117.31	49.22	26.12	
1954	478,975	10,234,665	10,886	.11	5,681,947	67,937,276	3,149	250.92	82.18	43.76	26.60	
1955	417,683	9,210,810	11,133	.12	4,669,733	72,567,058	3,149	235.10	77.63	45.24	25.28	
1956	418,059	9,220,244	14,353	.15	4,645,342	86,869,478	3,148****	246.52	89.43	39.97	25.60	

* Includes Puerto Rico and the Virgin Islands.

** Reduction is due to consolidation of two counties.

*** Reduction is due to fact no cattle under supervision in District of Columbia.

**** Reduction is due to consolidation of two counties in South Dakota.

TABLE V

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
ANIMAL DISEASE ERADICATION BRANCH

SUMMARY OF BOVINE TUBERCULOSIS ERADICATION IN COOPERATION WITH THE VARIOUS STATES

FISCAL YEAR 1956

STATE	Herds Tested	Cattle Tested	Infected Premises	Percent Infected	Reactors Found	Percent Reactors
Alabama	2,452	76,041	14	0.57	42	0.05
Arizona	1,179	21,021	11	0.93	20	0.09
Arkansas	1,141	26,735	14	1.22	41	0.15
California	19,120	695,706	641	3.35	2,156	0.30
Colorado	1,985	44,132	3	0.15	3	0.006
Connecticut	6,457	165,687	75	1.16	150	0.09
Delaware	2,865	52,295	26	0.90	58	0.11
Florida	3,022	145,393	17	0.56	50	0.03
Georgia	4,168	118,101	26	0.62	123	0.10
Idaho	1,041	17,758	1	0.96	1	0.005
Illinois	19,705	437,351	418	2.12	867	0.19
Indiana	5,067	94,536	149	2.94	299	0.31
Iowa	30,385	692,649	1,398	4.60	2,159	0.31
Kansas	12,306	233,545	57	0.46	110	0.04
Kentucky	1,414	25,825	8	0.56	18	0.06
Louisiana	1,689	69,984	59	3.49	221	0.31
Maine	7,438	94,406	4	0.05	4	0.004
Maryland	11,177	254,584	88	0.78	160	0.06
Massachusetts	9,338	185,396	44	0.47	96	0.05
Michigan	20,091	374,006	1,822	8.59	3,255	0.87
Minnesota	21,372	399,634	58	0.27	97	0.02
Mississippi	4,437	91,451	19	0.42	73	0.07
Missouri	11,711	241,044	51	0.43	146	0.06
Montana	664	21,809	8	1.20	10	0.04
Nebraska	3,458	74,676	51	1.47	66	0.08
Nevada	311	5,364	1	0.32	1	0.01
New Hampshire	6,261	98,777	3	0.04	3	0.003
New Jersey	9,231	217,734	142	1.53	192	0.08
New Mexico	757	16,720	1	0.13	1	0.005
New York	27,279	775,637	210	0.76	666	0.08
North Carolina	13,549	166,456	7	0.05	8	0.004
North Dakota	599	18,203	20	3.33	55	0.30
Ohio	15,806	222,294	168	1.16	287	0.12
Oklahoma	2,784	77,286	19	0.68	34	0.04
Oregon	17,278	152,440	29	0.16	90	0.05
Pennsylvania	32,270	584,698	225	0.69	657	0.11
Rhode Island	1,499	25,221	65	4.33	105	0.41
South Carolina	3,404	66,534	2	0.58	2	0.003
South Dakota	4,114	159,557	124	3.01	221	0.13
Tennessee	2,112	60,735	44	2.08	68	0.11
Texas	8,832	177,832	49	0.55	108	0.06
Utah	2,247	21,437	65	2.89	80	0.37
Vermont	6,578	190,002	34	0.51	84	0.04
Virginia	8,738	213,315	29	0.33	46	0.02
Washington	1,327	26,302	9	0.67	32	0.12
West Virginia	2,952	49,743	10	0.33	49	0.09
Wisconsin	39,838	1,119,246	389	0.97	1,139	0.10
Wyoming	483	7,986	3	0.62	8	0.10
Alaska	208	3,069	0	0.0	0	0.0
Hawaii	443	18,684	21	4.74	36	0.19
Puerto Rico	5,477	91,207	47	0.85	166	0.18
GRAND TOTAL	418,059	9,220,244	6,778	1.62	14,363	0.15

Calves vaccinated	4,381,397	4,772,535
Certified brucellosis		
free herds	71,606	102,360
Certified counties	379	500
Certified States	3	5
Herds under supervision	2,585,277	2,737,483
Cattle under supervision ...	31,948,708	42,582,071

* In the fiscal year 1955, the percentage of infected herds and cattle was based on blood tests only. In 1956 the method of calculating the incidence of infection was changed to include those herds and cattle which were negative to the brucellosis ring test. This change accounts for the major reduction in the percentage of infected herds and cattle in 1956 below 1955. It is encouraging to note, however, that even without this change in the method of calculating, there would have been a decrease in the percentage of animal infection from 2.6 in 1955 to 2.19 in 1956.

- b. Percentage of reactors slaughtered increases. While there was only a small increase in the number of reactors located there was greater elimination of diseased animals. Approximately 67,500 more reactors were slaughtered in fiscal year 1956 than in fiscal year 1955. This can be attributed in a large part to the continued payment of indemnity for reactor animals.
- c. Washington and Wisconsin achieve modified-certified brucellosis free status. At the close of fiscal year 1954, only 18 of Washington's 39 counties and none of Wisconsin's 71 counties had achieved modified-certified brucellosis free status. During June 1956, both States achieved this status and became the first two States to certify under the accelerated program. The success of the program in these two States indicates clearly that the incidence of brucellosis can be reduced sufficiently to minimize economic loss to cattle owners, where both State and Federal co-operating agencies plan a well-organized program and provide adequate laws and financial support. Maine, New Hampshire, and North Carolina are the other three States which had achieved and maintained certification prior to this time.
- d. New regulations will minimize spread of brucellosis. Considerable difficulty has been encountered in establishing an effective brucellosis interstate regulation which would not seriously restrict normal trade channels. However, an acceptable regulation was published in the Federal Register during July 1956, part of which was effective immediately

and part was effective January 1, 1957, which will serve to minimize the interstate movement of animals affected with brucellosis, and thus limit spread of the disease.

- e. Distribution of costs of the brucellosis eradication program and the sources of funds for the 1956 fiscal year are as follows:

	<u>Indemnity Payments</u>	<u>Operating Cost</u>	<u>Total</u>
Total program	\$6,060,351	\$14,125,249	\$20,185,600
Less, direct obligations under Salaries and Expenses, ARS ...	<u>548,000</u>	<u>3,413,165</u>	<u>3,961,165</u>
Cost of accelerated program a/.....	<u>5,512,351</u>	<u>10,712,084</u>	<u>16,224,435</u>

- a/ Funds for the accelerated program transferred from Commodity Credit Corporation pursuant to Public Law 690, approved August 28, 1954, and Public Law 465, approved April 2, 1956.

- f. A comparison of the funds provided for the fiscal years 1955 and 1956 by the Federal Government and cooperating States and counties follows:

	<u>1955 fiscal year</u>		<u>1956 fiscal year</u>	
	<u>Federal Government</u>	<u>State Cooperators</u>	<u>Federal Government</u>	<u>State Cooperators</u>
Indemnity ..	\$ 4,614,606	\$ 1,736,491	\$ 6,060,351	\$ 4,134,627
Operating funds	<u>10,718,791</u>	<u>9,497,240</u>	<u>14,125,249</u>	<u>11,595,852</u>
Total	<u>15,333,397</u>	<u>11,233,731</u>	<u>20,185,600</u>	<u>15,730,479</u>

Tables VI, VII and VIII and Figures 25 and 26 show by States the funds made available during the 1956 fiscal year, and other data pertaining to the program.

TABLE VI
Brucellosis Eradication

Fiscal Year 1956

STATE	FEDERAL			STATE		
	Indemnity Payments	Operating Cost	Total	Indemnity	Operating Cost	Total
Alabama	104,793	317,247	422,040	-	90,000	90,000
Arizona	8,327	75,225	83,552	8,233	35,137	43,370
Arkansas	92,964	260,487	353,451	-	60,000	60,000
California	-	184,124	184,124	-	356,958	356,958
Colorado	8,281	90,152	98,433	-	23,560	23,560
Connecticut	-	46,435	46,435	-	95,900	95,900
Delaware	14,870	29,575	44,445	26,677	58,323	85,000
Dist. of Col.	-	871,997	871,997	-	-	-
Florida	66,341	245,872	312,213	33,329	232,962	266,291
Georgia	100,076	276,913	376,989	-	204,300	204,300
Idaho	64,712	247,010	311,722	12,221	89,279	101,500
Illinois	230,545	492,368	722,913	-	830,034	830,034
Indiana	286,181	414,912	701,093	-	656,836	656,836
Iowa	194,571	439,447	634,018	196,443	358,557	555,000
Kansas	-	235,614	235,614	-	40,097	40,097
Kentucky	77,795	166,662	244,457	-	128,000	128,000
Louisiana	762,397	279,755	1,042,152	776,551	616,621	1,393,172
Maine	16,518	60,848	77,366	14,538	95,089	109,627
Maryland	108,654	296,934	405,588	111,481	118,548	230,029
Massachusetts	14,232	77,043	91,275	-	50,000	50,000
Michigan	236,767	373,370	610,137	-	320,536	320,536
Minnesota	192,521	1,525,591	1,718,112	103,850	658,850	762,700
Mississippi	163,632	303,637	467,269	-	85,800	85,800
Missouri	294,332	694,347	988,679	218,195	494,655	712,850
Montana	-	428,979	428,979	-	250,000	250,000
Nebraska	175,945	584,305	760,250	55,200	254,800	310,000
Nevada	10,683	99,085	109,768	-	35,200	35,200
New Hampshire	3,130	41,121	44,251	6,263	86,237	92,500
New Jersey	53,817	84,930	138,747	162,277	153,268	315,545
New Mexico	6,955	120,394	127,349	6,194	14,806	21,000
New York	-	83,772	83,772	-	1,182,500	1,182,500
North Carolina	17,530	142,107	159,637	9,425	74,875	84,300
North Dakota	147,747	183,396	331,143	2,228	177,772	180,000
Ohio	-	175,078	175,078	-	260,000	260,000
Oklahoma	-	248,299	248,299	-	75,000	75,000
Oregon	75,570	185,676	261,246	25,261	167,619	192,880
Pennsylvania	314,078	458,608	772,686	394,206	924,294	1,318,500
Rhode Island	2,226	9,996	12,222	10,334	12,666	23,000
South Carolina	20,520	218,131	238,651	19,962	95,538	115,500
South Dakota	31,284	146,237	177,521	34,399	90,601	125,000
Tennessee	159,165	327,731	486,896	-	248,000	248,000
Texas	-	14,381	14,381	-	54,000	54,000
Utah	25,478	159,155	184,633	-	29,200	29,200
Vermont	57,204	153,504	210,708	57,228	40,172	97,400
Virginia	55,405	216,067	271,472	-	225,826	225,826
Washington	48,824	344,729	393,553	50,835	254,326	305,161
West Virginia	9,972	110,627	120,599	7,136	82,864	90,000
Wisconsin	1,747,599	1,286,809	3,034,408	1,747,598	1,012,534	2,760,132
Wyoming	13,610	138,198	151,808	-	14,880	14,880
Alaska	550	-	550	-	-	-
Puerto Rico	44,550	158,369	202,919	44,563	78,832	123,395
	6,060,351	14,125,249	20,185,600	4,134,627	11,595,852	15,730,479

TABLE VII

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE

ANIMAL DISEASE ERADICATION BRANCH

SUMMARY OF BOVINE BRUCELLOSIS ERADICATION IN COOPERATION WITH THE VARIOUS STATES

FISCAL YEAR 1956

State or Territory	Brucellosis blood and Calfhood vaccinations							Brucellosis Ring Tests				
	Herds tested	Cattle	Infected Herds		Reactors		*Reactors Held	Calves vaccinated	Herds tested	Estimated cattle represented	Sus- picious herds	Estimated negative cattle
			Number	Per- cent	Number found	Per- cent						
Alabama	18,118	230,028	2,312	11.5	8,135	2.71	172	59,069	7,408	289,388	2,821	69,844
Arizona	4,265	52,284	281	6.0	818	1.11	402	11,188	1,161	59,794	351	21,217
Arkansas	8,898	103,391	1,863	10.3	4,280	2.03	88	82,214	14,363	188,128	5,002	107,754
California	7,895	58,906	745	9.4	1,744	2.95	0	343,053	26,417	376,790	10,946	305
Colorado	10,860	72,836	868	3.5	1,641	0.77	335	68,133	31,235	365,825	1,536	139,103
Connecticut	7,264	147,789	988	12.2	1,805	1.11	1,804	18,663	3,560	70,245	1,218	15,508
Delaware	3,712	50,140	250	5.9	538	0.93	0	5,204	1,576	30,793	233	7,948
Florida	10,775	189,826	991	8.4	4,606	2.03	8	63,726	3,386	224,451	1,020	36,721
Georgia	13,205	249,760	2,105	12.9	6,465	1.79	312	33,245	9,650	385,750	3,748	110,918
Idaho	8,187	101,109	1,489	1.4	2,772	0.76	0	127,712	36,706	543,736	6,544	262,224
Illinois	70,915	660,526	6,014	5.4	11,985	1.14	599	139,271	86,741	1,324,173	8,779	388,512
Indiana	76,609	782,340	7,662	6.5	15,464	1.28	0	58,490	91,461	1,149,608	10,964	427,349
Iowa	36,978	376,721	9,704	8.1	18,470	1.29	0	207,773	185,525	2,845,605	28,817	1,053,433
Kansas	16,569	167,722	2,313	5.2	4,930	0.61	8	109,433	52,658	1,152,149	4,977	636,991
Kentucky	11,797	162,022	1,964	14.9	4,848	2.70	1,209	32,260	2,062	25,799	633	17,839
Louisiana	21,174	411,545	7,004	30.7	27,044	6.10	413	96,382	7,476	187,803	4,275	32,489
Maine	4,896	74,316	371	4.2	568	0.36	10	9,783	8,903	188,166	145	83,493
Maryland	18,254	371,015	1,900	9.8	3,703	0.95	0	47,583	1,261	23,897	177	20,224
Massachusetts	3,615	64,280	616	10.4	907	0.82	269	18,040	3,848	77,234	1,516	46,416
Michigan	32,554	356,287	4,147	5.5	15,199	2.00	2,711	41,612	67,288	648,473	9,641	408,870
Minnesota	122,969	2,460,199	12,244	5.6	24,204	0.54	8,176	143,642	146,804	2,956,434	8,769	2,047,077
Mississippi	13,704	238,911	2,810	10.3	7,272	1.36	792	97,011	33,542	656,854	7,575	297,319
Missouri	84,170	909,059	10,215	8.1	21,458	1.54	0	195,689	137,319	1,797,142	23,448	461,780
Montana	14,946	470,342	1,363	8.7	4,378	0.90	4,378	323,654	1,354	22,935	120	14,517
Nebraska	36,102	455,598	3,324	4.4	8,033	0.83	11	244,997	75,001	979,921	4,277	516,116
Nevada	1,142	30,170	163	11.8	629	1.71	409	53,777	458	13,622	19	6,622
New Hampshire	7,156	94,855	70	1.0	115	0.12	0	10,400	0	0	0	0
New Jersey	9,402	204,335	1,101	11.1	2,309	1.04	59	17,894	1,378	47,123	146	18,653
New Mexico	4,315	70,044	148	2.4	333	0.33	0	29,923	1,998	33,549	101	31,853
New York	60,752	1,150,635	13,172	15.9	25,185	1.57	25,185	299,848	30,454	616,993	6,876	453,967
North Carolina	36,848	301,997	390	0.8	854	0.19	0	2,384	26,928	348,519	530	141,489
North Dakota	21,690	463,308	2,515	7.6	9,011	1.26	418	66,686	11,772	259,845	356	251,755
Ohio	32,610	282,412	3,631	5.3	8,639	1.28	2,792	63,198	83,367	1,018,041	7,597	390,615
Oklahoma	10,983	149,371	2,774	13.4	7,137	2.38	2,197	88,497	25,857	391,799	6,393	149,896
Oregon	28,135	314,327	747	2.7	2,509	0.80	0	66,086	1,454	14,540	245	0
Pennsylvania	55,841	845,408	5,364	6.2	9,559	0.76	135	130,987	63,052	793,507	1,327	408,714
Rhode Island	503	12,674	68	10.5	171	1.10	45	2,251	267	5,340	120	2,940
South Carolina	21,168	180,573	528	2.2	1,263	0.57	3	13,340	7,119	99,565	2,531	42,880
South Dakota	5,330	73,042	1,307	8.0	4,136	1.50	1,086	144,911	34,509	517,128	5,630	201,812
Tennessee	20,969	319,502	4,187	10.9	10,026	1.82	519	108,251	52,644	768,532	23,624	230,499
Texas	13,950	83,245	1,397	10.0	3,290	4.00	0	90,794	0	0	0	0
Utah	5,537	54,632	641	5.3	1,367	1.10	225	57,737	14,755	159,587	537	69,153
Vermont	6,114	144,915	1,359	7.8	2,843	0.62	420	56,742	28,739	735,664	8,529	313,061
Virginia	19,888	335,378	1,957	7.0	3,408	0.74	0	75,860	10,620	155,984	1,468	126,066
Washington	15,405	214,082	772	3.3	1,907	0.58	2	86,666	17,150	256,856	2,716	114,909
West Virginia	12,094	167,777	578	3.2	1,272	0.52	0	10,176	9,753	135,036	677	75,606
Wisconsin	90,989	1,846,693	29,029	14.2	66,589	1.61	0	548,010	262,653	5,311,750	38,113	2,301,061
Wyoming	2,876	45,862	357	6.5	1,130	1.33	0	136,261	5,426	78,222	295	39,420
Alaska	142	1,947	3	2.1	21	1.08	0	175	1	50	0	0
Hawaii	0	0	0	0.0	0	0.00	0	0	0	0	0	0
Puerto Rico	12,692	150,239	605	4.7	1,554	1.00	120	13,654	522	29,296	141	10,238
GRAND TOTAL	1,154,962	16,754,195	156,406	7.7	366,524	1.25	55,312	4,772,535	1,727,581	28,361,691	255,503	12,625,176

* Included in non-vaccinated reactors found.

** Percent of herd and cattle infection in States conducting Brucellosis Ring Tests calculated on basis of yearly blood tests total and BRT negative herds and cattle total reported during last six months of the year.

STATEMENT OF COMPARATIVE TESTING, HERDS AND CATTLE UNDER SUPERVISION, AVERAGE APPRAISAL, SALVAGE,
AND STATE AND FEDERAL INDEMNITY IN BRUCELLOSIS ERADICATION WORK
FISCAL YEAR 1935 TO 1956 INCLUSIVE

Fiscal Year	Tests Conducted		Reactors found	Reactors held	Per-cent infection	Under Supervision		Appraisal	Salvage	Average during year		Federal Indemnity
	Herds	Cattle				Herds	Cattle			States Paying Indemnity	State Indemnity	
1935	212,482	3,317,760	381,010	-	11.5	187,109	2,936,347	\$56.86	\$19.87	1	\$27.99	\$24.29
1936	470,788	6,674,709	457,104	-	6.8	449,644	5,780,418	70.65	27.44	2	20.57	26.86
1937	630,917	8,021,167	397,864	-	5.0	719,452	7,877,612	70.67	27.94	5	19.25	26.45
1938	671,310	7,837,443	324,532	-	4.1	1,035,454	9,447,137	80.37	32.07	10	20.36	26.69
1939	724,613	7,591,398	219,165	-	2.9	1,372,410	11,111,643	97.17	33.97	28	26.09	20.00
1940	590,393	6,937,428	171,953	-	2.5	1,615,755	12,315,329	90.85	34.99	36	17.12	14.96
1941	677,544	7,465,254	182,075	-	2.4	1,883,914	13,932,693	93.28	37.68	40	17.19	15.19
1942	591,835	6,891,219	209,238	-	3.0	2,105,294	15,627,027	99.19	52.06	41	17.71	15.83
1943	392,636	5,185,228	197,329	39,586	3.8	2,199,535	16,616,522	128.03	64.87	40	18.63	16.77
1944	386,266	5,235,912	226,079	53,558	4.3	2,254,235	17,326,138	143.34	59.75	40	22.54	19.30
1945	395,236	5,213,458	243,050	75,499	4.7	2,307,585	17,545,638	139.35	56.63	40	22.14	19.25
1946	389,814	4,876,866	245,786	86,738	5.0	2,360,699	17,870,154	149.65	68.64	40	22.07	19.34
1947	454,789	5,133,814	232,293	74,922	4.5	2,249,118	17,589,018	178.25	82.93	40	23.44	20.64
1948	533,936	5,434,792	232,199	68,977	4.3	2,291,760	18,128,318	203.98	107.38	39	24.44	21.17
1949	563,501	5,671,347	226,691	68,653	4.0	2,165,364	17,126,480	256.46	132.11	37	25.67	23.41
1950	618,801	5,974,721	208,298	66,351	3.5	2,299,556	18,527,624	237.68	114.21	31	25.16	22.75
1951	565,155	5,640,836	172,322	60,418	3.1	2,324,621	19,197,790	326.85	189.45	22	23.47	21.41
1952	670,738	7,491,327	314,260	179,101	4.2	2,149,078	21,496,113	334.68	189.39	25	26.03	24.05
1953	660,344	7,860,870	268,348	149,628	3.4	2,102,545	21,607,676	276.52	122.52	25	25.59	22.32
1954	696,207	9,002,109	235,666	80,672	2.6	2,298,284	24,572,013	190.90	89.18	26	20.64	2/ 11.71
1955	984,541	14,186,241	365,247	62,435	2.6	2,585,277	31,948,708	189.36	87.38	42	20.85	3/ 20.65
1956	1,154,962	15,754,195	366,524	55,312	*1.25	2,737,483	42,582,071	203.63	84.58	42	22.33	23.21

- 1/ During period May 1, 1929 to Oct. 8, 1954, Federal indemnity payment limited to not exceed total amount paid by cooperating State agencies. Includes Puerto Rico
- 2/ Federal indemnity for the period September 23, 1953 to October 8, 1954 was limited to \$9.00 for grade and \$18.00 for purebred animals.
- 3/ Effective October 8, 1954 the requirement that states match Federal indemnity payments was rescinded, and maximum payments were again raised to \$25.00 and \$50.00.

* Percent of infection in States conducting Brucellosis Ring Tests calculated on basis of total blood tests and total BRT-negative tests for last six months.

BRUCELLOSIS ERADICATION PROGRAM

THOUSANDS

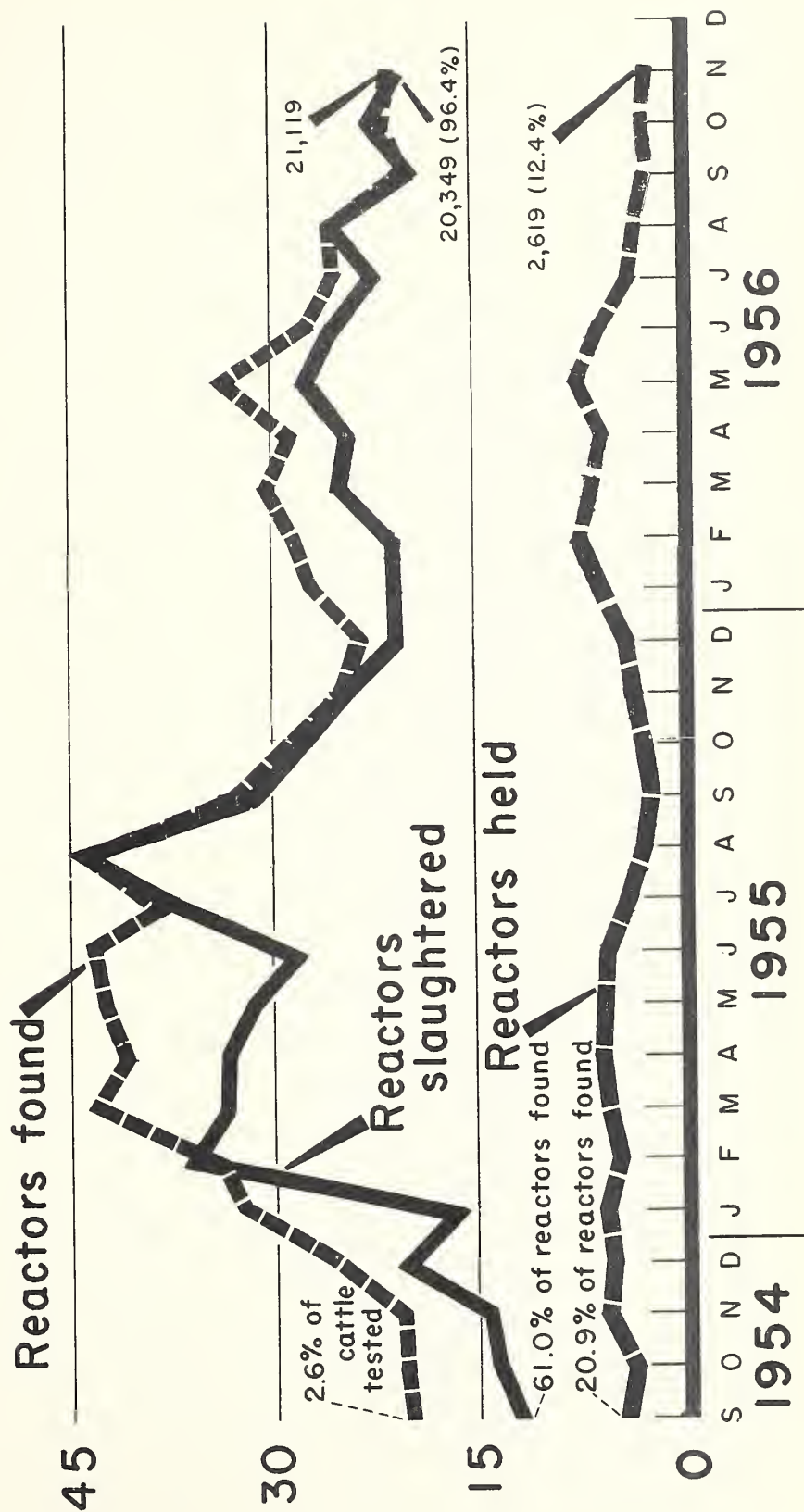


Figure 25

CATTLE BLOOD TESTED

BOVINE BRUCELLOSIS

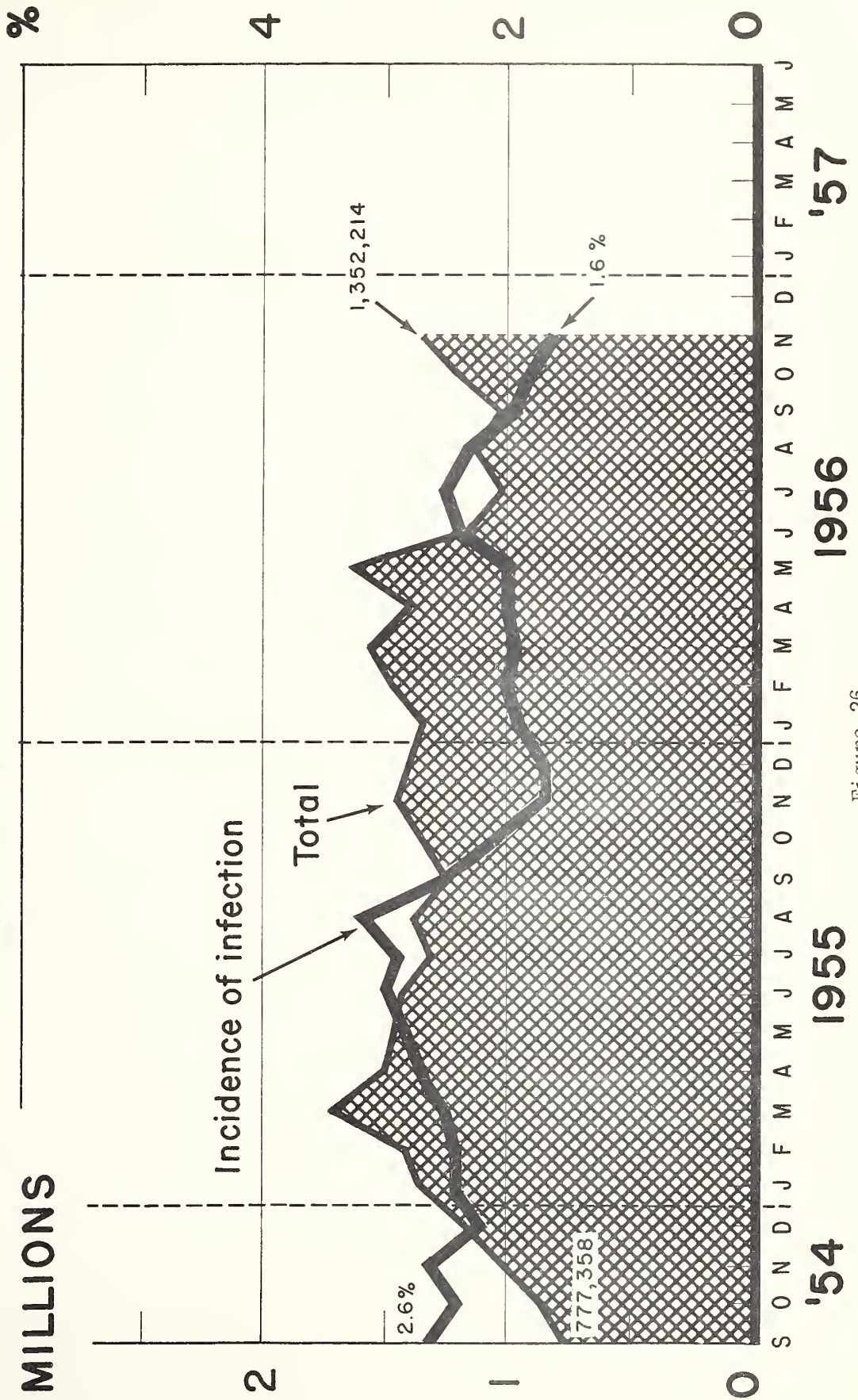


Figure 26

3. Scabies continues to be a serious problem.

- a. Sheep scabies. The following tabulation compares the activities of fiscal years 1955 and 1956:

	<u>FY 1955</u>	<u>FY 1956</u>
Sheep inspected	5,587,267	8,730,339
Number dipped	391,952	441,713
Infected sheep located	34,460	42,622
Infected flocks	442	607
States reporting sheep		
scabies	24	25
Counties reporting sheep		
scabies	219	267

There was a substantial increase in all phases of program activity due, in part, to increased concern over the continued existence of scabies and a corresponding interest in reporting infected flocks, and an increase in the incidence of the disease. Some of the increase is also due to the large number of inspections of flocks under surveillance because of other diseases of sheep. The Department is still being urged by major sheep raisers' associations, State livestock sanitary officials, and others, to give attention to a total eradication program. The program to eradicate scabies in Louisiana and Mississippi continues to show good results. Limited eradication measures are carried out in other States, particularly in the Midwest. However, the disease continues to be a serious problem. (See Table IX and Figure 27).

- b. Cattle scabies. There are listed below statistics covering this program which compare the activities of fiscal year 1955 and fiscal year 1956.

	<u>FY 1955</u>	<u>FY 1956</u>
Cattle inspected	1,146,174	1,763,243
Number sprayed or dipped	396,268*	52,003
Infected cattle located	9,523	6,898
Infected herds	60	65
States reporting cattle		
scabies	15	17
Counties reporting cattle		
scabies	41	55

*Considerably higher than average because of increased activities in Colorado for a temporary period.

Included in the tabulation above are 7 herds in which psoroptic cattle scabies (so-called common scab) was diagnosed - three herds in Colorado and one herd in each

of the States of Kansas, New Mexico, Texas, and Iowa. However, measures were taken to properly treat infected herds and trace the movements of exposed animals in all cases. Crowley and Las Animas counties in Colorado were placed under Federal quarantine effective November 21, 1956. Table X and Figure 28 reflect data pertinent to this program.

- c. Training activities increase efficiency of scabies inspectors. To fill the needs for qualified personnel, a training course was conducted at Albuquerque, New Mexico, on the detection of scabies and the related skin diseases of livestock. In addition, visual aid material showing scabies mites, cattle and sheep affected with scabies and the methods of diagnosis and eradication was developed and distributed to the field stations and to veterinary colleges. Also, a film on cattle and sheep scabies has been developed and will soon be ready for distribution.
4. Cattle fever tick eradication program confined to buffer strip along Texas - Mexico border and to Puerto Rico.

The following provides a comparison of program activities between fiscal years 1955 and 1956:

	<u>FY 1955</u>	<u>FY 1956</u>
<u>Inspections or dippings</u>		
United States	1,483,312	1,558,759
Puerto Rico (including sheep and goats)	<u>141,216</u>	<u>192,756</u>
Total	<u>1,624,528</u>	<u>1,751,515</u>

It will be necessary to continue work in the buffer strip along the Texas - Mexico border as long as tick infestation remains in Mexico. Cattle fever ticks were found in Marron Valley, California, an area adjacent to the Republic of Mexico. Animals in the infected area are being dipped regularly in order to eradicate this reinfestation. A program in Puerto Rico which has been underway for some years is now nearing completion. Testings and inspections were continued in Florida at auction markets with negative results in areas where recent reinfestations were previously found.

5. Diagnosis, control, and eradication of miscellaneous diseases actively continued.
 - a. Bluetongue of sheep reported in Southwest. In the calendar year 1955 bluetongue of sheep was reported in 546 flocks in 71 counties from 8 different States, most of which were in the southwestern part of the country. Vaccinations have been used extensively in an effort to curb this disease.

TABLE IX

U. S. DEPARTMENT OF AGRICULTURE - AGRICULTURAL RESEARCH SERVICE
ANIMAL DISEASE ERADICATION BRANCH - SPECIAL DISEASES ERADICATION SECTION
ANNUAL REPORT OF COOPERATIVE STATE-FEDERAL SHEEP SCABIES ERADICATION

July 1, 1955 - June 30, 1956

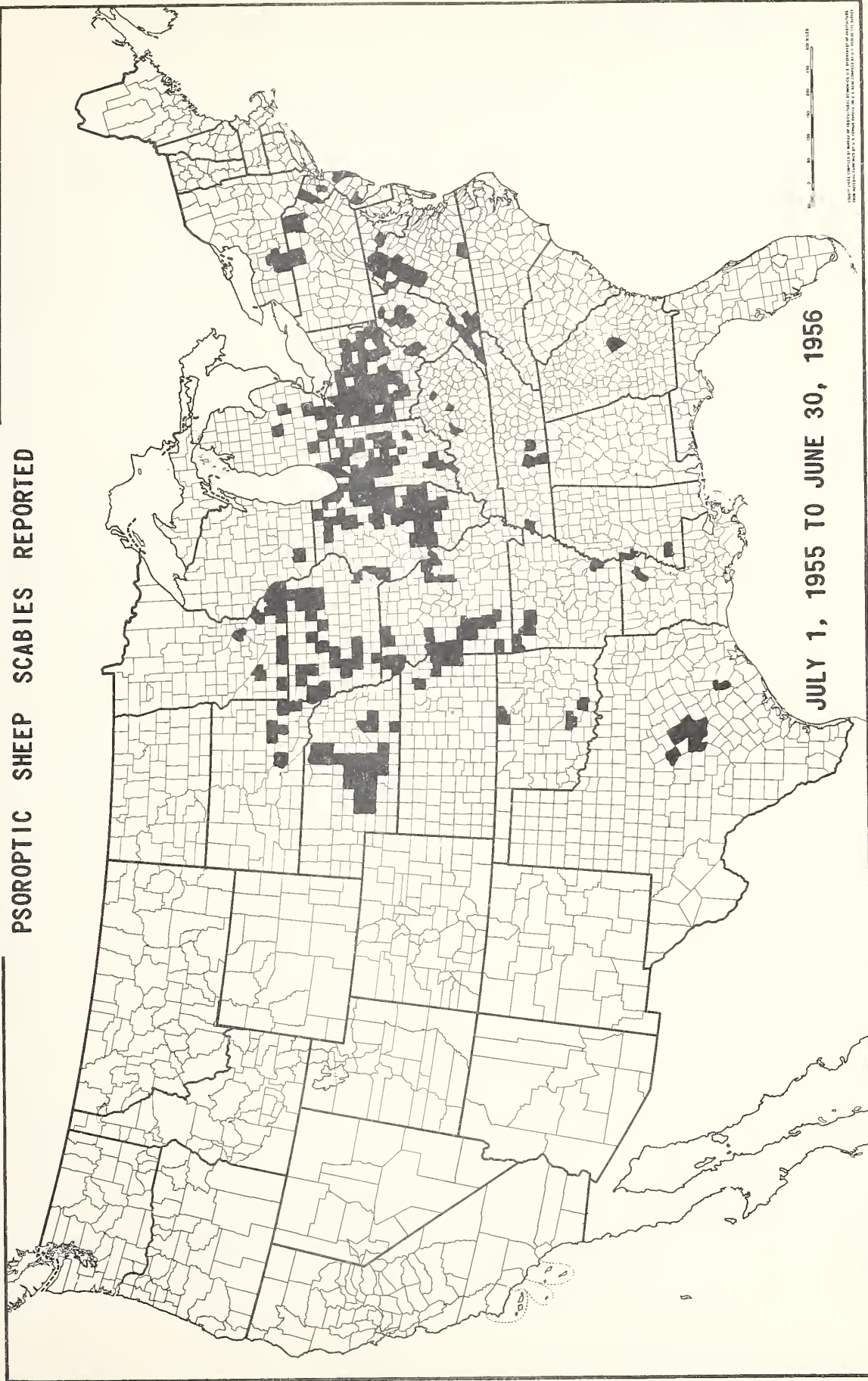
As Reported from Respective States	Number of Infected Counties	Number of Infected Flocks	Number of Infected Sheep	Total Sheep Inspected	Total Dippings
Alabama	0	0	0	0	0
Arizona	0	0	0	793,592 x4106	690
Arkansas	4	4	1,125	81,739 x3	x3 6,970
California	0	0	0	625,331 x38	0
Colorado	0	0	0	13,984	0
Connecticut	0	0	0	0	0
Delaware	0	0	0	0	0
Florida	0	0	0	10,317	119
Georgia	1	1	26	26	26
Idaho	0	0	0	22,668	0
Illinois	32	59	3,908	39,722	4,337
Indiana	33	69	2,167	9,396	3,657
Iowa	24	44	x4 3,203	100,280 x12	x4 3,413
Kansas	5	11	735	44,747	1,096
Kentucky	3	4	179	140,587	179
Louisiana	1	2	56	323,694	130,823
Maine	0	0	0	0	0
Maryland	1	1	25	226	90
Massachusetts	0	0	0	0	0
Michigan	7	11	1,986	5,627	3,772
Minnesota	11	27	4,117	4,527	2,796
Mississippi	2	2	285	262,483	46,641
Missouri	20	51	2,910	14,141	6,554
Montana	0	0	0	0	0
Nebraska	15	45	4,932	12,568	5,902
Nevada	0	0	0	50,707	0
New Hampshire	0	0	0	0	0
New Jersey	5	6	214	2,941	178
New Mexico	0	0	0	1,367,428	1,491
New York	3	5	415	778	453
North Carolina	0	0	0	0	0
North Dakota	0	0	0	0	0
Ohio	46	148	9,917	14,324	12,774
Oklahoma	3	3	530	1,040	1,555
Oregon	0	0	0	0	0
Pennsylvania	4	7	208	300	137
Rhode Island	0	0	0	0	0
South Carolina	0	0	0	0	0
South Dakota	6	7	646	223,258	2,683
Tennessee	4	9	567	32,747	6,671
Texas	6	9	149	xx3,743,548	xxx184,867
Utah	0	0	0	457,068	0
Vermont	0	0	0	0	0
Virginia	15	57	2,806	13,803	3,753
Washington	0	0	0	105,734	0
West Virginia	15	24	1,464	32,598	4,421
Wisconsin	1	1	52	189	117
Wyoming	0	0	0	178,221	5,548
Total	267	607	x4 42,622	8,730,339 x4159	x7 441,713

x goats

xx Includes 19,878 Goats Inspected

xxx Includes 419 Goats Dipped

PSOROPTIC SHEEP SCABIES REPORTED



U.S. GOVERNMENT PRINTING OFFICE: 1956 O - 348,000

Figure 27

TABLE X

U. S. DEPARTMENT OF AGRICULTURE - AGRICULTURAL RESEARCH SERVICE
ANIMAL DISEASE ERADICATION BRANCH - SPECIAL DISEASES ERADICATION SECTION
ANNUAL REPORT OF COOPERATIVE STATE-FEDERAL CATTLE SCABIES ERADICATION

July 1, 1955 - June 30, 1956

As Reported from Respective States	Number of Infected Counties		Number of Infected Herds		Number of Infected Cattle		Total Cattle Inspected	Total Dippings or Sprayings
Alabama	0		0		0		0	
Arizona	0		0		0		197,900	51
Arkansas	0		0		0		361	0
California		9C		14C		2,874C	406,279	4,549
Colorado	1P		3P		1,567P		228,104	39,148
Connecticut	0		0		0		0	0
Delaware	0		0		0		0	0
Florida	0		0		0		0	0
Georgia	0		0		0		0	0
Idaho	0		0		0		39	10
Illinois		9C		10C		11C	653	65
Indiana		4C		4C		4C	Not Reptd.	Not Reptd.
Iowa	1P	1C	1P	1C		60P 3C	7,906	756
Kansas	1P		1P		185P		69,692	555
Kentucky	0		0		0		0	0
Louisiana	0		0		0		0	0
Maine	0		0		0		0	0
Maryland	0		0		0		0	0
Massachusetts	2 not det.	2C	2 not det.	2C	7 not det.	6C	111	0
Michigan		2C		2C		15C	136	60
Minnesota	0		0		0		0	0
Mississippi	0		0		0		51,357	0
Missouri	0		0		0		0	0
Montana	0		0		0		79	0
Nebraska	0		0		0		487	0
Nevada	0		0		0		0	0
New Hampshire	0		0		0		0	0
New Jersey	0		0		0		0	0
New Mexico	1P 1S*		1P 1S*		107P 229S*		33,808	1,483
New York		9C		10C		36C	53	53
North Carolina	0		0		0		0	0
North Dakota	1S		1S		1S		1	1
Ohio		2C		2C		2C	55	55
Oklahoma		1C		1C		475C	1,001	987
Oregon	0		0		0		0	0
Pennsylvania	0		0		0		0	0
Rhode Island	0		0		0		0	0
South Carolina	0		0		0		0	0
South Dakota	0		0		0		0	0
Tennessee		1S*		1S*		53S*	53*	53*
Texas	2P		1P		1,036P		763,548	3,084
Utah	0		0		0		0	0
Vermont	0		0		0		0	0
Virginia	0		0		0		0	0
Washington		1C		1C		1C	918	876
West Virginia	0		0		0		0	0
Wisconsin	2S	2C	3S	2C	154S	72C	395	217
Wyoming	0		0		0		307	0
Total	6P 5S 42C		7P 6S 49C		2,955P 437S		1,763,243	52,003
	2 not det.		2 not det.		7 not det.		3499C	

*Swine

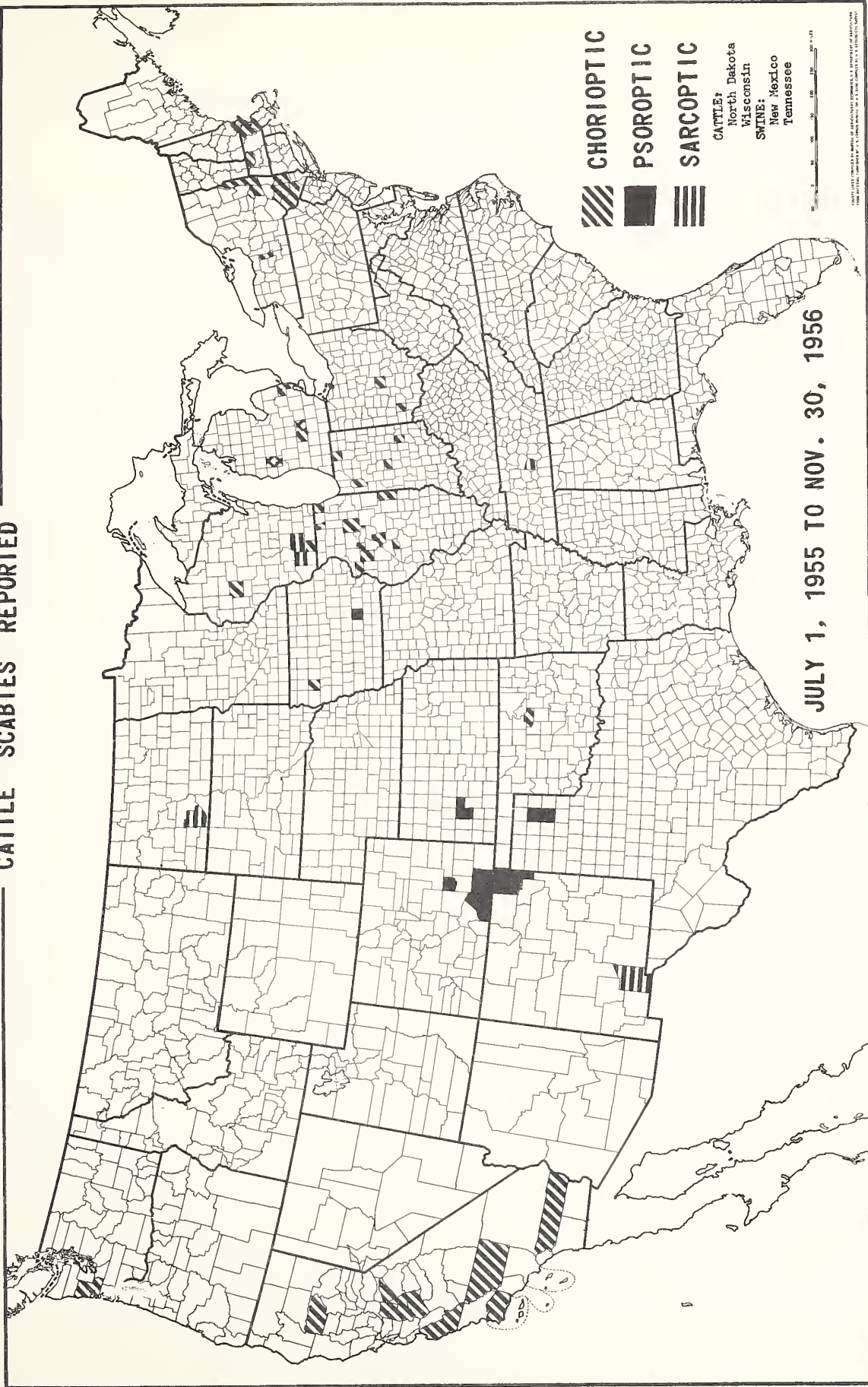
C--Chorioptic

D--Demodetic

P--Psoroptic

S--Sarcoptic

CATTLE SCABIES REPORTED



JULY 1, 1940

U.S. DEPARTMENT OF AGRICULTURE

Figure 28

NEG. 45779A BUREAU OF AGRICULTURAL ECONOMICS

- b. Sheep under surveillance for scrapie. Considerable effort was devoted to the eradication of scrapie during fiscal year 1956. The disease was diagnosed in 23 flocks in 19 counties of the States of Ohio, Tennessee, Iowa, North Carolina, Missouri, Indiana, Virginia, Wisconsin, and Alabama. At present, all known infection has been eradicated. Approximately 1,833 flocks are under surveillance, totaling 464,380 sheep. Federal indemnity payments in the amount of \$59,956 were made in fiscal year 1956, and \$42,377 by the participating States.
- c. Dourine and glanders of horses decline. A total of 2,338 samples of equine sera was submitted for laboratory examination disclosing one positive reactor. It is believed that dourine and glanders were eradicated from the Papago Indian reservation in Arizona during the fiscal year 1956. Both diseases are prevalent in adjacent Mexico and the danger of their being reintroduced is a constant threat. Check tests are continuing in the area concerned as a precaution against the recurrence of infection.
- d. Survey testing to determine extent of anaplasmosis expanded. Serologists were trained by the Department to conduct cooperative studies with different States. Plans were developed in cooperation with the Livestock Sanitary officials of the States of Tennessee and Virginia whereby control and eradication measures would be studied under varied plans and conditions in a large number of cattle located in numerous herds. Similar plans are in the development stage in other States. In the fiscal year 1956, the Department and the Territory of Hawaii inaugurated a cooperative anaplasmosis program. Federal cooperation in this program in Hawaii is considered a pilot operation from which information regarding effective control and eradication measures can be developed. Indemnity payments in the amount of \$23,212 were made, being shared equally by the Federal Government and Hawaii. The logical approach to the eradication of anaplasmosis from the Islands is through tests and the elimination of reacting animals because of the limiting vector situation existing there. Good progress has been made in this endeavor.
- e. Incidence of leptospirosis being surveyed in three States. In several respects, the clinical manifestations of bovine leptospirosis are similar to brucellosis. Consequently, the disease is becoming increasingly important, especially in those areas where the brucellosis eradication effort is most active. As a means of determining the extent to which leptospirosis exists, field investigations designed to survey the incidence of this disease were initiated in

three States. This study incorporates the use of a new serological test which appears to be more practical than procedures heretofore available for diagnostic purposes. Based on preliminary results, it appears that leptospirosis may be rather extensive in the States being surveyed. An effort is being made to correlate serological findings with clinical histories in reactor herds as a means of developing an accurate interpretation of test results.

- f. Field investigations on vesicular stomatitis conducted in southeastern States. Extensive studies were conducted in the southeastern States to obtain information on the incidence of vesicular stomatitis and on the likely reservoirs of infection. These field studies centered largely in the States of North Carolina and Georgia. As a result of these studies, and through normal reporting channels, 138 cases of suspected vesicular conditions were investigated, with a total of 28 animals confirmed as vesicular stomatitis cases. Studies of a similar nature are continuing and, in addition to the disease information obtained, there is being developed with the livestock industry and veterinary profession a better appreciation of the significance of early detection and diagnosis of all vesicular conditions.
- g. Hog cholera incidence low. Several factors contribute toward the low incidence of hog cholera at this time, including:
 - (1) The trend continues away from the use of live virulent hog cholera virus as a method of vaccination; less than one-third of the swine in the nation are now vaccinated by this manner. The use of live virulent hog cholera virus is prohibited in Mississippi, Georgia, Alabama, Tennessee, Louisiana, South Carolina, Wyoming, and North Dakota.
 - (2) Heat treating of garbage fed to swine, which is now required by 46 states, is believed to have had beneficial effects in reducing the spread of hog cholera by destroying the virus in any infected pork scraps that may be in the garbage.

A pilot hog cholera project has been inaugurated in Florida for the purpose of determining whether plans and procedures can be developed as a basis for state or national eradication programs. Discussions have been held on this matter between the Department and the Hog Cholera Eradication Committee of the United States Livestock Sanitary Association.

- h. Standby staff maintained to combat possible outbreak of foot-and-mouth disease. Mexico was declared free of foot-and-mouth disease on December 31, 1954, and has remained so since that date. A small standby staff of American personnel is maintained in Mexico which can be expanded rapidly to meet emergency situations. Activities include the maintenance of emergency equipment, adequate laboratory facilities, communication facilities, and material necessary to set up the administrative organization required in an emergency. Every effort is being made to keep informed on the animal disease situation in Mexico through all available sources, and to make visual and veterinary inspections of suspicious cases.
 - i. Training programs helpful. Six regional meetings were held to bring to the attention of those most directly concerned the dangers to the livestock industry from possible introduction of foreign animal diseases, whether introduced accidentally or intentionally.
 - j. Animal disease reporting system inaugurated. An animal disease reporting system was established to assemble and disseminate information relative to the occurrence of a variety of animal diseases throughout the country. The first monthly report, called the "Animal Morbidity Report" was issued in January, 1956. It is designed to provide State and Federal veterinary authorities with an index of the incidence of the various diseases by States and will be of valuable assistance in planning and directing animal disease eradication programs.
6. Supervision maintained over interstate movement of livestock.
- a. Inspections hold steady except for swine increase. The purpose of inspection at public stockyards is to prevent the interstate movement of diseased livestock, and to facilitate the interstate movement of healthy livestock. During the fiscal year 1956, Department employees at 48 stockyards in 46 cities inspected 25,187,037 cattle, and 12,835,044 sheep, and supervised the dipping of 235,488 sheep for scabies in compliance with the regulations of the Department and States of destination. They also inspected 32,518,288 swine, as compared to 26,989,458 in fiscal year 1955, and supervised the immunization and disinfection of 155,773 of these animals against hog cholera. In permitting shipments of apparently healthy animals from public stockyards, employees issued 230,579 certificates to accompany the consignments to their various destinations.

- b. Receipt of reactors increases. In order to reduce losses from communicable diseases to a minimum, particularly among stocker and feeder cattle, sheep, and swine, special attention at public stockyards is being directed toward prompt detection, segregation, treatment, and proper disposition of animals showing symptoms of disease. During the year there arrived at these yards over 34,298 diseased animals. In addition, there were 178,666 brucellosis, 7,668 tuberculosis, and 294 paratuberculosis reactors received. The number of brucellosis reactors channeled through public stockyards has increased greatly because of the accelerated eradication program. The utmost vigilance must be exercised to see that the identity of these reactors is maintained and that they are penned separately in the yards, weighed individually for indemnity purposes and disposed of only for immediate slaughter at Federally supervised establishments.
- c. Special inspections for vesicular conditions continue. Top priority at public stockyards continued to be given to the examination of ruminants and swine for vesicular conditions such as foot-and-mouth disease and vesicular exanthema of swine. All suspected cases during the year proved to be negative.
- d. Volume of cleaning and disinfection of vehicles increases. The changes in methods of transporting livestock involving the increasing use of trucks and the decreasing use of rail shipments are reflected in 31,372 trucks, and 4,096 railroad cars cleaned and disinfected because of exposure to contagion. An investigation was made during the year of facilities available for cleaning and disinfecting trucks and railway cars at points where public stockyards are located as Federal regulations governing the interstate movement of livestock require the cleaning and disinfecting of vehicles transporting reactor cattle. In many instances, the excuse given for failure to comply with these requirements was that no facilities were available, or that deliveries were made after regular working hours, or on days when disinfection services were not obtainable. At stockyards where there was an apparent need for better facilities or service, the stockyards companies have shown a willingness to cooperate. Reports indicate progress is being made in improving both equipment and service for cleaning and disinfecting trucks and railway cars at terminal markets authorized to receive reactor cattle.
- e. Testing of disinfectants results in high standards. Stockyards inspectors collected and forwarded to the Department's chemical laboratory in Washington, samples of the various permitted cresylic disinfectants used in the disinfection

of infected premises, alleyways, cars, trucks, etc., to ascertain whether these products were being maintained at the high standard required by Department specifications for this type disinfectant.

- f. Twenty-eight Hour Law enforced. The purpose of the 28-Hour Law is to prevent the over-confinement of animals shipped in interstate commerce by common carrier. Way-bills and records maintained by carriers and others are examined daily and apparent violations reported at stations where Federal livestock inspectors are stationed. Inspections are also made from time to time at approximately 900 feed, water, and rest stations in 48 States to ascertain if the facilities and equipment are maintained for the safe and humane handling of the species of animals for which they were designed to accommodate.

During the year the Department received 345 reports of alleged violations of the 28-Hour Law and recommended prosecution of 164 cases. Reports showed penalties of \$12,110 and costs were imposed by the courts on 113 violations.

- g. Regulatory laws enforced. To further implement these laws designed to prevent the interstate dissemination of contagious, infectious and communicable diseases of animals, new or revised regulations with respect to brucellosis and paratuberculosis in domestic animals have been published. New regulations with respect to psittacosis, also known as ornithosis, in poultry are being considered.

The Department received reports of 297 violations of the animal quarantine laws. Prosecution was recommended in 89 cases. Disposition was made by the courts during this period of 61 cases, and fines totaling \$12,712 were imposed.

7. Program services section established. In order to carry out the necessary laboratory functions of the control programs, a new section, designated as the Program Services Section, was established to which was delegated the responsibility for the technical direction of all laboratory services necessary to conduct the livestock regulatory programs. These services involve the production of Brucella antigen and testing of Brucella vaccines; testing of pullorum antigens, testing of E. Rhusiopathiae vaccine and hog cholera virus; examination of fixed tissues (received from the field) for tuberculosis, scrapie, equine encephalomyelitis and other diseases; serological tests for vesicular diseases, and anaplasmosis; dourine

and glanders; chemical analysis of dips, disinfectants, commercially produced antigens, and miscellaneous products.

Animal Quarantine:

1. Import-export regulations enforced. All horses, ruminants, swine, and poultry offered for importation into the United States were carefully inspected at coastal, air, and border ports of entry. Certain animals and poultry were quarantined upon arrival at designated quarantine stations thus serving to prevent the introduction and dissemination of animal and poultry diseases of foreign origin into the United States.

The Bureau of Customs and the Public Health Service continued their valuable assistance in the administration of import regulations, the latter agency obtaining for the Department 28,931 declarations from masters of ships, certifying to the absence or presence of prohibited animals, or meats therefrom, aboard their vessels.

The number of animals, including poultry, inspected and passed for entry, in fiscal year 1956 were as follows:

	Canadian Border Ports	Mexican Border Ports	Ocean Ports	Total	Refused Entry
Cattle	59,486	78,639	22	138,147	729
Swine	2,400	- -	72	2,472	59
Sheep	5,005	- -	1	5,006	2
Goats	14	2	2	18	1
Equines	13,924	15,533	1,227	30,684	463
Poultry	6,974	2	10,906	17,882	436
Other animals.	66	- -	333	399	25
Total	87,869	94,176	12,563	194,608	1,715

2. 15 percent increase in certificates of purity of breeding and identity of animals offered for free entry. Under the provisions of Paragraph 1606 of the Tariff Act of 1930, certificates as to the purity of breeding were issued for 22,782 animals imported during fiscal year 1956, as compared with 19,732 animals for the previous fiscal year. The purebred animals certified for entry free of duty were as follows:

Horses	423
Cattle	20,646
Sheep	694
Swine	392
Goats	1
Dogs	624
Cats	2
Total	<u>22,782</u>

3. Sanitary control maintained over entry of various animal products, and hay and straw. Products permitted entry under restrictions designed to prevent the introduction into the United States of foot-and-mouth disease, rinderpest, anthrax, or other infectious diseases of animals and poultry were transported from the port of entry under seal to approved destination establishments and there handled under supervision.

The large volume of animal products imported during fiscal year 1956 included 68,552,693 hides and skins; over 453 million pounds of wool; and approximately 10 million pounds of animal casings, of which 430,000 pounds were disinfected. Inasmuch as Canada is free of foot-and-mouth disease and is in a rather favorable position with respect to other contagious or infectious diseases, animal casings originating in and shipped directly from Canada are no longer subject to the requirements of this Department and records of such shipments are not required. In addition to the foregoing, approximately 131,000 tons of miscellaneous animal byproducts were given inspection during the fiscal year. Railroad cars, trucks, and premises involved in the transportation and handling of restricted products were disinfected.

As was the case last year, particular attention was given to preventing the landing of fresh, chilled, or frozen meats, or garbage derived therefrom, from air and ocean transports provisioned in countries where foot-and-mouth disease or rinderpest exists. During the year, 32,559 first port of call ocean vessels and 59,568 airplanes arrived in foreign commerce.

Unsterilized hay and straw used as packing material from countries where foot-and-mouth disease or rinderpest exists was destroyed.

4. Animals for export and transporting vessels inspected. Animals are inspected and tested in various districts of origin throughout the United States and supervision is given to livestock facilities and other accommodations on ocean vessels and aircraft as required by law. The trend towards the export shipment of livestock to foreign countries by air rather than by ocean vessel continues. Since air ports are usually located many miles from ocean ports where Department activities are normally carried on this has increased the demand on the inspection service. In the fiscal year 1956, a total of 117,824 animals were inspected and tested for export as follows:

	Destination			
	Canada	Mexico	Other Countries	Total
Cattle	8,684	20,421	14,787	43,892
Swine	- -	6,887	3,287	10,174
Sheep	3,138	44,024	1,302	48,464
Goats	103	8,888	239	9,230
Equines	418	2,762	1,218	4,398
Other Animals	1,060	18	588	1,666
Total	13,403	83,000	21,421	117,824

5. Outstanding licenses under the Virus-Serum-Toxin Act permitted the production of 114 different biological products as of June 30, 1956. Several products are manufactured in more than one form so that the total number of different biological products was 191. The number of filed production outlines from licenses representing these products total 1,004. Labels and circulars for licensed biological products reviewed during this fiscal year total 2,199 sets.

Preliminary steps were taken during fiscal year 1956 toward re-directing the inspection of more biological products on an intensified basis.

The following data reflect the progress and anticipated extent of the work.

	: Actual	: Estimated	: Estimated
	: F.Y. 1956	: F.Y. 1957	: F.Y. 1958
Establishments produc-	:	:	:
ing anti-hog-cholera	:	:	:
serum and hog-cholera	:	:	:
virus	27	26	25
Production (cc):	:	:	:
Serum (Completed	:	:	:
product)	812,554,903	775,681,500	750,575,400
Virus:	:	:	:
Simultaneous	22,078,731	20,753,320	19,337,940
Hyperimmunizing ..	140,848,891	131,397,120	128,769,060
Inoculating	574,262	605,000	645,000
Animal Inspections ...	2,010,956	1,889,400	1,751,220
Tests Supervised	5,502	5,171	5,067
Establishments produc-	:	:	:
ing hog-cholera vaccine:	17	19	20
Production (doses) ..	32,324,484	34,140,100	35,505,600
Establishments produc-	:	:	:
ing other biologics ..	49	51	53
Production:	:	:	:
CC	745,102,866	756,102,500	775,561,800
Milligrams	566,215,116	622,836,500	685,119,100
Units	416,629,450	428,230,000	471,053,200
Products Destroyed	:	:	:
(all kinds):	:	:	:
CC	20,931,228	20,350,500	22,006,200
Milligrams	38,930,246	40,506,050	42,560,200
Export Certificates	:	:	:
Issued	1,074	1,100	1,100

2,206 samples of biological products and sub-cultures of organisms were collected and forwarded to Washington laboratories for testing. Included in these were 1,706 samples of Brucella abortus vaccine, of which 4.0 percent were found unsatisfactory when examined in these laboratories. These unsatisfactory batches of Brucella abortus vaccine were destroyed under Federal supervision and represented 3,530,643 cc. or enough vaccine to treat 706,129 calves. In the course of 742 purity and safety tests on hog-cholera virus, approximately 6.0 percent of the batches tested were suspected of containing the swine-erysipelas organism. When subjected to laboratory examination, approximately 2.0 percent of those submitted were found to contain the erysipelas organism and the virus was destroyed under the supervision of a Federal inspector.

The following shows the volume of biological products certified for export:

Products *	F.Y. 1955	F.Y. 1956	Estimated	
			F.Y. 1957	F.Y. 1958
Anti-hog cholera serum (cc) ...	32,794,000	40,722,000	45,500,000	46,575,000
Other serums ...	318,000	285,000	275,000	250,000
Hog cholera virus (cc) ...	1,006,000	1,218,000	1,315,000	1,345,000
Aggressins	5,000	- -	- -	- -
Antitoxins (units)	2,956,000	2,548,000	2,550,000	2,500,000
Bacterins	4,440,000	5,680,000	5,750,000	5,825,000
Diagnostics	1,187,000	129,000	85,000	75,000
Vaccines	7,558,000	13,570,000	15,750,000	16,875,000

* Doses unless otherwise indicated.

6. Investigations continued under the Marketing Agreement and Order.
The following table shows comparable figures by fiscal years of the number of handlers operating under the Marketing Agreement and Order:

	Actual		Estimated	
	1955	1956	1957	1958
Producer-handlers	30	29	31	32
Distributor-handlers or equivalent, including wholesale purchasers and handlers	254	258	260	265

Legal action was instituted against six producers who failed to have 40 percent of their previous year's sales on hand May 1, 1955. All of the cases have been prosecuted with the principals being fined fifty to two hundred dollars each. Two investigations were conducted against wholesalers. One individual was alleged to have violated the price posting provisions of the Order. Investigation, however, indicated that there had been no violation of this provision. The other case was referred to the Control Agency and the individual was required to make changes to bring the firm into compliance.

MEAT INSPECTION

Current activities: Federal meat inspection assures clean, sound, and wholesome meat for human consumption, free from adulteration, and truthfully labeled. The work consists of inspection of animals and of carcasses at the time of slaughter; inspection at all stages of preparation of meat and meat-food products to assure sanitary handling; destruction of condemned product to prevent its use for human food; enforcement of measures that insure informative labeling; inspection of meat and meat-food products offered for importation; and a system of certification to assure acceptance of domestic meats in foreign trade. Meat and meat-food products are examined for compliance with specifications of governmental purchasing agencies; reimbursements are received for the cost of such services. Reimbursements are also received from meat packing establishments for the cost of overtime work performed at their request. Continuous inspection of the manufacture of process or renovated butter is also included under this activity.

Selected examples of recent progress

1. The scope of operations under the meat inspection laws is indicated by the following tables:

Meat Inspection Activities

At Close of Fiscal Years

	1954	1955	1956	1957	Estimated	1958
Number of establishments covered ..	1,067	1,120	1,184	1,268		1,364
Number of cities and towns in which establishments were located	410	435	471	509		545

During Fiscal Years

Antemortem inspection:

Animals passed	90,733,945	98,011,332	108,353,506	104,228,428	108,526,400
Animals suspected	188,806	183,505	187,278	185,432	190,000
Animals condemned	6,181	5,560	5,799	5,621	6,000
Total animals inspected	90,928,932	98,200,397	108,546,583	104,419,481	108,722,400

Postmortem inspection:

Carcasses passed	90,640,616	97,913,097	108,241,761	104,123,906	108,425,000
Carcasses condemned	281,974	281,664	297,994	289,469	291,000
Total carcasses inspected	90,922,590	98,194,761	108,539,755	104,413,375	108,716,000

Inspection of animals by species:

Antemortem inspection (animals)

Cattle	18,479,229	18,728,579	19,682,992	19,683,000	19,683,000
Calves	7,480,146	7,601,035	7,607,007	7,600,250	7,607,000
Sheep and lambs	14,368,902	14,489,397	14,209,371	14,200,400	14,209,800
Goats	53,094	86,662	85,736	84,575	86,000
* Horses	250,295	237,478	179,537	150,006	135,000
Swine	50,297,266	57,057,246	66,781,940	62,701,250	67,001,600

Total

	90,928,932	98,200,397	108,546,583	104,419,481	108,722,400
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During Fiscal Years (Cont.)

	Estimated		
	1954	1955	1956
Postmortem inspections (carcasses)			
Cattle	18,475,936	18,725,455	19,679,898
Calves	7,479,329	7,601,035	7,606,018
Sheep and lambs	14,368,314	14,488,712	14,208,652
Goats	53,093	86,659	85,736
* Horses	250,282	237,462	179,531
Swine	50,295,636	57,055,438	66,779,920
Total	90,922,590	98,194,761	108,539,755
			104,413,375
			19,680,000
			7,599,200
			14,199,600
			84,575
			150,000
			62,700,000
			19,680,000
			7,606,000
			14,209,000
			86,000
			135,000
			67,000,000
			108,716,000

Inspection of animals by species:
: (Continued)

* Horses are slaughtered and their meat is identified as such. It is handled and prepared in separate establishments from those handling cattle, calves, sheep, swine and goats.

Meat and Meat Food Products Prepared and Processed
Under Federal Inspection by Fiscal Years

Fiscal Year	Pounds
1954	14,833,471,229
1955	16,373,853,029
1956	18,207,298,082
1957 (est.)	18,000,000,000
1958 (est.)	18,300,000,000

Meat and Meat Food Products Prepared and Processed Under Supervision
Classified by Type of Product

	<u>FY 1954</u> <u>(Pounds)</u>	<u>FY 1955</u> <u>(Pounds)</u>	<u>FY 1956</u> <u>(Pounds)</u>
Placed in cure:			
Beef	136,094,809	164,672,208	168,474,988
Pork	3,093,765,867	3,451,336,426	3,704,683,088
Other	2,203,569	1,957,685	1,627,209
Smoked and/or dried:			
Beef	56,013,138	60,244,221	57,064,186
Pork	2,139,975,927	2,439,226,080	2,637,948,995
Cooked meat:			
Beef	66,032,830	73,101,077	79,768,828
Pork	263,174,996	307,671,355	312,782,389
Other	3,091,667	4,966,107	3,944,622
Sausage:			
Fresh finished	201,932,522	221,700,872	238,389,759
To be dried or semidried .	126,633,460	130,224,210	141,755,135
Frankfurters, weiners	555,346,197	583,978,872	633,253,242
Other	615,002,760	615,356,815	619,392,336
Loaf, headcheese, chili			
con carne	196,715,686	199,550,183	206,697,935
Steaks, chops, roasts	633,492,264	647,475,136	701,945,249
Meat extract	3,152,777	2,351,403	1,901,226
Sliced bacon	713,408,005	870,459,413	998,599,496
Sliced, other	88,967,894	124,921,064	165,257,932
Hamburger	188,859,297	146,647,548	163,467,760
Miscellaneous meat products.	39,592,579	57,490,791	71,865,176
Lard:			
Rendered	1,589,966,136	1,905,963,444	2,186,136,855
Refined	1,250,946,222	1,422,965,360	1,657,600,508
Oleo stock	112,922,272	114,267,593	108,575,896
Edible tallow	138,296,143	153,329,341	185,131,543
Rendered pork fat:			
Rendered	89,873,300	104,058,865	115,007,109
Refined	55,355,299	62,007,297	62,858,489
Compound containing animal			
fat	398,489,120	504,920,765	578,097,254
Oleomargarine containing			
animal fat	31,260,209	36,653,905	54,077,642
Canned products	1,988,303,143	1,915,940,600	2,307,406,746
Horse meat products:			
Cured	6,419,028	7,102,178	4,543,040
Chopped	26,658,687	21,733,926	20,053,480
Edible oil	2,370,053	352,310	-
Canned horse meat	19,155,373	21,225,979	18,989,969
 Total	 14,833,471,229	 16,373,853,029	 18,207,298,082

Examination of Meat and Meat Food Products for Other Government Agencies (Reimbursable)

<u>Branch of Government</u>	<u>FY 1954 (Pounds)</u>	<u>FY 1955 (Pounds)</u>	<u>FY 1956 (Pounds)</u>	<u>(Estimated) FY 1957 (Pounds)</u>
Department of Agriculture:				
Agricultural Marketing Service . . .	- -	22,787	3,445,115	4,000,000
Commodity Credit Corporation -				
Commodity Stabilization Service .	76,426	9,566,334	207,865,283	200,000,000
Forest Service	- -	64,686	202,662	202,000
Department of Commerce:				
Civil Aeronautics Administration .	27,640	63,250	70,608	71,000
Maritime Administration	- -	18,440	237,538	238,000
Department of the Interior:				
Alaska Road Commission	- -	-	901	1,000
Fish and Wild Life	- -	13,403	192,065	192,000
Bureau of Indian Affairs	- -	8,063	125,826	126,000
Department of Health, Education and Welfare:				
Public Health Service	41,684	364,832	2,321,827	2,322,000
Department of Justice:				
Bureau of Prisons	52,964	56,241	125,164	125,000
Department of the Army	- -	171,356,999	192,496,323	200,000,000
Department of the Army -				
Engineer Corps	- -	16,000	30,079	30,000
Coast Guard	79,361	48,434	47,421	47,000
Marine Corps	92,578	72,597	68,208	68,000
Department of the Navy	352,549,957	280,986,225	156,632,572	157,000,000
General Services Administration	- -	107,060	1,182,147	1,182,000
Veterans' Administration	2,764,098	21,291,238	30,776,004	35,000,000
Total	355,684,708 1/	484,056,589 2/	595,819,743 3/	600,604,000

- 1/ Includes 6,163,807 pounds rejected.
2/ Includes 6,716,356 pounds rejected.
3/ Includes 5,208,708 pounds rejected.

Summary of Samples Examined in Laboratories for Determination
of Adulteration or other Objectionable Conditions, Fiscal Year 1956

	<u>Number Examined</u>	<u>Reported Adversely</u>
Meat and meat food product	10,257	1,740
Edible fats and oils	205	5
Binders (cereal, dried skim milk, soya flour)	736	22
Seasonings (spices, flavorings)	4,520	81
Curing materials	1,233	21
Miscellaneous	1,423	78
Samples of animal foods	105	6
Imports	3,045	79
Samples for Army contracts	10,588	--
Miscellaneous for other agencies	10,221	--
Fat samples for insecticide residues	245	--
<u>Totals</u>	<u>42,578</u>	<u>2,032</u>

Examination of Labels and Sketches

	<u>FY 1955</u>	<u>FY 1956</u>
Number of labels and sketches approved	36,631	37,313
Number of labels approved for imported meat	920	668
Number of labels and sketches refused approval	2,265	2,308
<u>Total number of labels and sketches reviewed .</u>	<u>39,816</u>	<u>40,289</u>

Inspection of Imported Meat and Meat Food Products

<u>Fiscal Year</u>	<u>Pounds</u>
1954	334,326,990
1955	278,837,336
1956	277,479,030
1957 (Est.)	290,000,000

2. Specimens of diseased tissue examined. During the past year, 1,250 examinations of questionable material were made in servicing the needs of inspectors. These included histopathological diagnosis, biological assays, serological identifications, bacteriological evaluations and parasite viability determinations. Five hundred and two of these specimens were submitted from cases suspected of being bovine tuberculosis, at the request of the Animal Disease Eradication Branch, as an aid in their eradication program. A wide variety of pathological conditions were diagnosed. Since facilities for handling cultures of pathogenic organisms were not available during this year the work was limited to working with formalin-fixed tissues (tissues in which the bacteria have been killed).

3. Packing of certain frozen foods in hermetically sealed containers permitted. Investigations conducted by research departments of large meat packing organizations were directed, checked, and reviewed to determine safety factors that will assure the development of unmistakable spoilage before dangerous toxins are produced. The findings have formed a basis for permitting the packing of certain frozen foods in hermetically sealed containers. Further studies are being made to determine whether this field of products may be further extended.
4. Use of antibiotics in meat preservation investigated. Research is being conducted by several meat packing organizations and others to determine the safety and acceptability of the use of antibiotics in preventing spoilage of meat. This work is being closely supervised and the results will be used to determine whether antibiotics may be used for this purpose.
5. Extensive losses in sausage eliminated through use of anti-oxidants. Studies were made during the year concerning the problem of rancidity developing in certain types of unsmoked dry sausage. As the result of findings that small amounts of approved antioxidants will prevent the formation of rancidity rather extensive losses in this product have been eliminated.

(b) State Experiment Stations

	Payments to States, Hawaii, Alaska, and Puerto Rico	Penalty Mail	Total
Appropriation Act, 1957, and Base for 1958	\$29,503,708	- -	\$29,503,708
Budget Estimate, 1958	34,003,708	\$250,000	34,253,708
Increase	<u>4,500,000</u>	<u>250,000</u>	<u>4,750,000</u>

SUMMARY OF INCREASES, 1958

<u>Payments to States, Hawaii, Alaska, and Puerto Rico</u>	
To strengthen and expand research programs at the State agricultural experiment stations	+4,500,000
<u>Penalty Mail</u>	
For penalty mail costs of State agricultural experiment stations	+250,000

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase		1958 (estimated)
			Retirement: Costs (P.L. 854)	Other	
1. <u>Payments to States, Hawaii, Alaska, and Puerto Rico</u>					
a. Hatch Act, as amended by the Act of August 11, 1955	\$24,138,218	\$29,003,708	- -	+\$4,500,000 (1)	\$33,503,708
b. Agricultural Marketing Act (Title II) sec. 204(b) (August 14, 1946) ...	500,000	500,000	- -	- -	500,000
Total, Payments to States, Hawaii, Alaska, and Puerto Rico ...	24,638,218	29,503,708	- -	+4,500,000	34,003,708
2. <u>Penalty Mail</u>	- -	- -	- -	+250,000 (2)	250,000
Unobligated balance	115,490	- -	- -	- -	- -
Retirement Costs (P.L. 854)	- -	- -	+\$33,700	[+6,300]	[40,000]
Total appropriation or estimate:	24,753,708	29,503,708	- -	+4,750,000	34,253,708

INCREASES:

(1) Increase of \$4,500,000 to strengthen and expand research programs at the State agricultural experiment stations.

Need for Increase: The increase is requested to initiate research on many new problems demanding attention in the several States. In addition, present research efforts on many major problems facing the American farmer are not adequate and must be intensified to arrive at a solution at an early date. The requested increase is based on expressed needs of various commodity and technical committees at the State and regional levels. A careful evaluation of problems in relation to current research programs by the State agricultural experiment stations indicates particular need for new and expanded research in the following areas:

1. Development of new and extended uses for farm products through marketing and utilization research to obtain a greater return for the producer and a better product for the consumer.
2. Development of more efficient systems of livestock production and management.
3. Reduction of losses in production efficiency of meat and animal products due to diseases and parasites. Substantial research effort should be devoted to studies of new diseases and to strengthening research on many extremely troublesome disease and parasite problems that have not been brought under control.
4. Increasing the efficiency of field and horticultural crops production with particular emphasis on new and expanded research on plant disease and insect control.
5. Development of more efficient and effective use of soil and water resources through increased research effort on intensity and distribution of rainfall, water requirements of different crops, and soil management practices to obtain most favorable moisture use.
6. Increasing efficiency in the use of labor, land, machines, feed, and fertilizer to reduce farm operating costs. This is a constant challenge requiring more research. Ways of improving income of farm groups with limited resources require special study.

Some of the problems needing additional research in these and the other major research fields are presented below. The relationship of new and expanded research to current programs is also considered. Of the proposed increase, 72 percent, or \$3,240,000, would be distributed to States by formula and 25 percent, or \$1,125,000, would be allotted to the Regional Research Fund. Three percent, or \$135,000, would be available for Federal administration of the program.

Proposed work under funds distributed to States by formula.

Marketing and Utilization Research: A continued and expanded program in marketing and utilization is needed to develop new and extended uses for farm products and to provide the basis for increases in marketing efficiency with resulting improvement in returns to producers and a better dollar's worth of product to consumers.

A basic purpose of marketing research is the gathering of objective and scientific information on the buying and selling, pricing, processing, transporting, storing, and handling of agricultural products and making this available to farmers, marketing agencies, and consumers. The use of such information by those making marketing decisions results in greater marketing efficiency, benefits of which accrue to both producer and consumer. The need for improved efficiency is acute since the many extra services demanded by consumers and higher costs of factors used in marketing have been pushing up the cost of getting a dollar's worth of farm products from the farmer's gate to the consumer's table. United States consumers continually demand more marketing services, particularly in the form of more extensive processing and packaging, while at the same time cost rates, including wages, transportation, and other factors, are constantly rising.

Research designed to improve marketing efficiency and to develop new market outlets requires the cooperation of economists, engineers, biologists, and other scientists. Lines of work needing increased attention include improved methods and techniques in processing, packaging, transporting, and storing, which will lower costs, improve quality, and reduce waste and spoilage.

More studies are needed of market structure and organization, pricing, and consumer demand and acceptance, including potential increases in the demand for food products which might be expected from better nutrition and the overcoming of obstacles to higher level diets.

Increased work is planned on potential markets for farm commodities such as forestry products and horticultural specialties on which such research has been relatively limited.

Animal Production: In general the gains in the efficiency of livestock production during the last two decades have not equalled the gains in efficiency of crop production. To meet the needs of our rapidly growing population and the increasing per capita consumption of livestock products, more efficient breeding, feeding, and management practices are needed.

Recent progress in developing pre-starter and starter rations for suckling pigs will aid in reducing baby pig mortality and improve growth rate and efficiency. By supplementing the sow's milk with experiment station recommended starter rations, it is possible to raise large litters of 12 to 14 pigs efficiently and profitably. Selection for large litter size has been only partially effective, however, in improving this important economic trait. Efforts to determine the factors involved indicate that approximately half of the ova liberated at the time of breeding are fertilized and reabsorbed early in their embryonic period or never fertilized.

The problem of surplus animal fat is not new but is assuming even greater importance because of its effect on the market for animal products. In recent years the annual production of animal fats has resulted in a large exportable surplus of lard and inedible fats. Animal scientists

working in cooperation with farmers, breed associations, and extension personnel are making good progress in the development of testing methods for the identification of superior meat-type hogs for breeding purposes, but this work must be expanded.

A more difficult problem still to be solved is how to produce beef cattle that yield tender, juicy, high-quality cuts without the waste fat on the surface and abdomen.

Little is known concerning the physiological effects of the many complex environmental factors or the importance of genetic adaptation on animal development and performance. Impaired growth during critical stages of development may result in lowered reproductive efficiency and sub-optimum lifetime production. Research is needed to segregate and evaluate the effects of climatic, nutritional, and genetic factors determining the production of meat and fiber by range cattle and sheep.

Fundamental research on the physiology of the rumen and the nutrition and physiology of the rumen microorganisms is needed to speed our progress in improving feed utilization by cattle and sheep and in preventing bloat and other rumen disorders.

Progress made in the development of faster growing broiler strains and more productive egg-laying strains calls for re-evaluation of nutritive requirements of poultry. Evidence of new growth factors in certain feed supplements has been obtained during the past 2 or 3 years.

Animal Diseases and Parasites: The prevention or control of animal diseases plays a major role in the efficient production of livestock. Fertility, feed utilization, growth rate, productiveness, quality, and length of life all are affected by disease. A disease of low grade, perhaps not apparent except under close observation, is often just as damaging as one easily recognized because of its ability to bring about death losses. Changing systems of feeding, breeding, and management may be accompanied or followed by new or formerly unimportant and unrecognized diseases. Many of the known diseases still pose unsolved problems, especially under new and large-scale production methods.

One of the most troublesome diseases facing cattlemen of Western States is urinary calculi, commonly termed "waterbelly". Surveys indicate that three percent of the weaner steer calves are lost from this condition in Montana. Urinary calculi also assume great importance in feedlot steers. Colorado has estimated yearly losses to the cattle-fattening industry from urinary calculi at one-half percent. The combined 1954 total for the western beef cattle industry was nearly \$75,000,000.

Parasites residing in the digestive organs of livestock provide great economic hazards for producers. Their prevention and control offers one of the quickest, cheapest, and most dependable methods of increasing livestock production without increasing numbers of animals and feed and labor costs.

Rearing chickens under modern confinement methods, with large numbers of birds produced in a very small amount of space, tends to aggravate certain poultry diseases. Respiratory diseases still remain a major problem. Chronic respiratory disease in chickens and sinusitis and ornithosis in turkeys, for instance, are receiving increased attention. Other newly recognized entities which are being studied are a transmissible arthritis and hemorrhagic disease, both of broilers.

Both new and old disease and parasite problems demand that fundamental research be expanded to prevent or control the numerous diseases incidental to modern livestock production. With adequate support of such research, considerable progress may be expected in minimizing serious diseases and parasites currently hampering efficient livestock production, especially in the light of new methods, drugs, equipment, and techniques already developed.

Grass and Forage Crop Production: The Soil Bank Program provided in the Agricultural Act of 1956 represents a national effort toward lowering surplus producing crop acreages and devoting them to conservation purposes. Grassland agriculture to fit into a gradually growing livestock economy is an important part of the national goal.

Increased research is needed on the utilization of grasses and legumes in the form of hay and silage, pasture and range management research, including renovation, fertilization, species persistence, and weed control. Expanded experimental work is needed in breeding for insect and disease resistance. There is also need for expansion of the testing of improved varieties being developed in the breeding program for seed and forage production.

The production of hybrid and synthetic alfalfas is still in the experimental stages, but their utilization promises more certain production of higher quality forages and pasture with wide adaptation. The serious spread of the spotted alfalfa aphid in recent years further increases the need for research on breeding varieties that have resistance to important diseases and insect parasites.

Field Crop Production: Many field crops have been developed to the limits of present knowledge of plant breeding and genetic principles. Additional research is needed in three general areas, namely, crop improvement, crop culture, and crop environment. Basic research is required on the mechanism of inheritance, development and maturation processes, and disease and insect resistance of crops to expand the scientific basis for further crop improvement. Plant breeding studies should be intensified further to maintain present levels of production against the continual attack of diseases and insects. Special characters in plants, such as dwarfism and earliness to escape summer drought in corn, need to be studied with a view to adapting crops for more efficient production and handling.

New studies are needed on the inheritance of fiber qualities in selfed lines and hybrids of upland cotton, the breeding of cotton for insect and disease resistance, development of plant types suitable for

mechanical harvesting, cold tolerance, terminal maturity, and natural defoliation to aid mechanical harvesting.

Current research with the new herbicides and weed control techniques indicates that it should be expanded in different areas where local conditions require that general practices be modified or new herbicides be developed.

Plant Diseases and Insects: Efficient crop production makes plant disease and insect control essential in modern farming. These controls are available through use of improved cultural practices, the growing of resistant varieties, and the use of chemicals in suppressing the causal organisms. To make these control measures most effective, however, research is needed to learn more about the life histories of disease producing organisms and insects and whether there are weak spots in their life cycles which may be effectively attacked to reduce or eliminate their destructiveness. There is need for the development of effective techniques, such as serology, to distinguish, separate, and identify races of viruses, bacteria, rusts, and other organisms that attack plants. If the ecological requirements favoring the presence of microorganisms that attack plants were known, plant scientists would be in better position to recommend and initiate control measures.

Nematodes and soil-borne microorganisms are causing more injury to crop plants than was formerly realized and research on them needs to be expanded. Endemic pests, such as the spotted alfalfa aphid and the alfalfa weevil, have in recent years moved into and become more widespread and damaging in forage crop areas. Considerable research must be done on these pests to provide economical and efficient methods of control. To increase the benefits of biological control of insects there is need to investigate chemical control measures which are not incompatible with natural enemies of insect pests. The increasing tolerance and resistance of certain insects to organic chemicals is well known and research is needed to develop other means of controlling them.

Water Use and Conservation: Diminishing water resources are of national concern. Research on soil and water conservation, water use by plants, and irrigation needs are essential to meeting this problem. Increasing water uses made necessary by industrial enterprises and greater demands for water in the growing population centers are paralleled by increasing water needs on the farm, particularly for irrigation which is now being adopted widely in the South and East. Dropping water tables in some areas testify that subterranean water resources are not unlimited. For these reasons, a number of State agricultural experiment stations are urging research on fundamental climatological studies on the amount, time, and distribution of rainfall; and the effect of factors such as humidity, the stage of crop maturity, and the physical and fertility status of soils on the water requirements of different crops. Since water and soil conservation problems often go hand-in-hand, the State stations also urge a research program that would help develop soil management practices and procedures for the maintenance of favorable physical and moisture conditions. In humid areas soil physical properties which increase the rate of water absorption tend to decrease run-off losses and, to the same extent, to decrease irrigation needs.

Basic information on intake, retention, crop usage, and excess removal of water on major soils is inadequate for economically sound recommendations on either drainage or irrigation. In many areas there is need for a critical evaluation of land resources to provide information for the guidance of zoning and construction activities. If expenditures of public and private funds for control dams, structures, vegetative plantings, and the like are to be made effectively and efficiently, it is important that such basic information be sought through expanded research in this field.

Soils and Fertilizers: Efforts to get optimum production efficiency per acre often involve heavier fertilization, more intensive tillage operations, and at times supplemental irrigation. Considerable research is needed to learn more about the effects of such intensified production on particular crops and on specific soil types. The chemical industry continues to offer new fertilizer materials and to make improvements in physical properties of the older materials. Information is needed on rates, time, and manner of application and replacement of the materials for maximum benefit. The relationship of management and crop response to particular soil types or series needs further study. Much research is needed on water relationships in reference to soil conditions and plant requirements. Research is also needed on soil conditions as related to successful irrigation practices in the humid region. Critical evaluation is needed on the inter-relationships of tillage, chemical additions, and irrigation on properties of the soil which regulate aeration, moisture, movement, and the ease of root penetration.

Farm Mechanization and Structures: Mechanization is one of the keys to increased farm income and better living. It opens the door to improved soil and water conservation, decreased costs of production, reduced drudgery of hand labor, and proper use of energy and power in all the myriad tasks around the farmstead and the farm. Future developments may lead to widespread application of automation to routine farm tasks, the utilization of solar and atomic energy for many of the power requirements on the farm, and new and improved machinery and equipment for many farm tasks.

This progress can come from additional research, much of it by the State agricultural experiment stations. Almost every aspect of farm mechanization shows possibilities for further improvement.

The improvement of existing machinery and equipment is also a pressing need. Decreasing farm prices and increasing labor rates make greater labor efficiency mandatory in agricultural production. During recent years crop production labor needs have been materially reduced but only a meager gain has been made in reduction of livestock labor requirements, where expansion of research is particularly needed.

Horticultural and Forest Crop Production: In recent years substantial progress has been made in solving many of the factors limiting maximum production of horticultural crops. However, there remains a need for additional research in nutrition, weed control, moisture utilization, and improvement of market quality of fruits and vegetables. Many of

the plants used by nurserymen for propagation are now known to be symptomless carriers of viruses. When used in combination with other varieties and under certain environmental conditions, serious diseases may develop. Various horticultural plants should be indexed to locate virus-free stock which can be used to replace our infected plants. Experiment station research is needed to develop a nematode-resistant peach which will be adapted for growing in the southern areas where the burrowing nematode of citrus is becoming serious.

The increased demands on our lumber reserves has emphasized the need of applying research principles to forest crops which have been found to be successful in the past on our horticultural and agronomic crops.

Economics of Production: One of the surest ways for farmers to meet the cost-price squeeze is to reduce their operational costs through increasing efficiency in the use of labor, land, machinery, feed, and fertilizer. New mechanical devices, changes in feeds and fertilizers, cropping patterns, and breeding and handling techniques, to mention only a few, are constantly and progressively changing farm practices. The individual farmer's problem is to keep abreast and determine how the new practice may be applied and the extent to which it will pay. The marked differences in climate, topography, soils, and the farmer's background and training require research on a broad scale to provide the needed cost, price, yield, and other essential information necessary for farmers to make their management decisions.

Information must be sought to help the farmer determine on his own farm the most profitable cropping pattern and combinations of enterprises. Management studies must be made of the most profitable rates of fertilizer application under different conditions; profitable mechanization; greatest economic efficiency in feed conversion for dairy and other livestock; alternative use of farm land not suited for intensive cropping; conditions under which drainage and supplemental irrigation would be profitable; desirable tenure arrangements; capital requirements in making needed farm adjustments; and risks involved with respect to different farming systems and practices. Problems of low-income farmers and ways to improve their income need comprehensive study. Of immediate concern to the farmer and the country in general, is the determination of how farmers respond to specific farm programs, how farm resources may be used to improve farm income, how to promote better conservation practices, and how to keep surpluses under reasonable control.

Foods, Human Nutrition, and Home Economics: Expanded research in foods, human nutrition, and home economics is needed for improvement in quality and consumption levels of foods for home and institutional use to advance the technology of food processing; for nutrition research aimed at better defining and understanding human dietary requirements at all ages and in relation to activity patterns and food habits; for studies of serviceability and consumer practices in purchase and care of garments and household textiles; and for advancement of farm family financial security.

Much of the needed research in human nutrition is basic research to determine and define more accurately body requirements for specific nutrients; to investigate factors influencing these requirements; and to learn how nutrients function in body metabolism.

Recent research has suggested that the efficiency or the manner of utilization of a nutrient by the body may be affected by the presence or absence of other nutrients in the diet. Research must be conducted on these nutrient inter-relationships. As part of coordinated regional research, the experiment stations need to determine how utilization of protein may be affected by various dietary levels of ascorbic acid, riboflavin or fat; and to investigate relationships between fat and cholesterol.

Expansion of research is also needed to improve the rural home and rural life.

The estimated distribution of the increase by subject matter areas is as follows:

Field of Research	Amount	Percent
Marketing and Utilization	\$632,000	19.5
Animal Production	441,000	13.6
Animal Diseases and Parasites	214,000	6.6
Grass and Forage Crop Production	178,000	5.5
Field Crop Production	159,000	4.9
Plant Diseases and Insects	295,000	9.1
Water Use and Conservation	243,000	7.5
Soils and Fertilizers	223,000	6.9
Farm Mechanization and Structures	194,000	6.0
Horticulture and Forest Crop Production	259,000	8.0
Economics of Production	227,000	7.0
Foods, Human Nutrition, and Home Economics	175,000	5.4
Total	3,240,000	100.0

Regional Research Fund:

The Regional Research Fund authorized by Section 3(c)(3) of the Hatch Act, as amended August 11, 1955, supports cooperative regional research by the State agricultural experiment stations on problems that concern the agriculture of more than one State. Cooperation in the planning and conduct of research on problems concerning two or more States is playing an increasingly important role in the development of sound, well-coordinated research programs. The 1957 allotment of \$5,387,500 of regional research funds represents about one-fourth of the total available for the regional research program. About one-fourth comes from other Federal-grant funds, and one-half from State funds, making an over-all allotment of about \$20,000,000. In recent years, this cooperative research effort has had a

markedly beneficial effect on the total research programs of the State stations, since the coordination that has resulted also applies to related research that is not formally organized under the regional program.

The growth of regional research is illustrated by the fact that of the total of all funds available to the stations, both Federal-grant and non-Federal, the regional research fund was 3.1 percent in 1948 and 10.0 percent in 1955. A considerable number of regional projects had expenditures from Federal-grant and non-Federal funds in excess of \$100,000 in 1955. The marked expansion in the regional research program is also shown by the increasing number of regional projects. In the fiscal year 1955 there were 118 active regional and inter-regional projects; in 1956 there were 146 projects; and a program of 180 projects is planned for fiscal year 1957.

The proposed increase includes \$1,125,000 to be used for the support of new regional research projects and for the more adequate support of new research begun in 1957. New regional projects proposed under this increase include:

Agricultural Economics

- Rural economic development
- Adjusting farming to prospective markets

Animal Production

- Endocrine relationships in dairy cattle
- Environment for laying hens
- Hog cholera reservoirs
- Shipping fever of ruminants
- Stresses in egg production and quality

Crop Production

- Water infiltration
- Winter injury and survival
- Water needs and utilization
- Purity of seeds

Farm Mechanization and Structures

- Materials handling on the farm
- Drainage design

Marketing and Utilization

- Meat tenderness
- Horticultural grades and standards
- Utilization of agricultural products
- Technology of dairy marketing

Plant Diseases and Insects

- Spotted alfalfa aphid
- Parasitic nematodes
- Root diseases of forages
- Small fruit viruses
- Role of nematodes in root diseases

In addition to the above listed regional project proposals, an inter-regional project has been proposed on facilitating the marketing of seed through improved testing procedures.

Plan of Action:

Of the increase requested, 72 percent, or \$3,240,000, would be distributed to the agricultural experiment stations in each of the States, Hawaii, Alaska, and Puerto Rico in accordance with prescribed formulas in the Act and would be matched in full. Twenty-five percent, or \$1,125,000, would be made available for accelerating the program of regional cooperative research authorized by section 3 (c)(3) of the Hatch Act, as amended. Three percent of the increase, or \$135,000, would be available for additional expenses by the State Experiment Stations Division necessary for administration of the increased amount of funds available to the experiment stations, and for coordination of research among the States, and between the States and the Federal Government. It would be used to strengthen the technical staff required to help plan, coordinate, and review the over-all research program, so as to obtain the maximum benefit of the increase.

The relation of the proposed increase to the funds available for fiscal year 1957, is as follows:

	<u>FY 1957</u>	<u>FY 1958 (estimated)</u>	<u>Increase</u>
Allotted to States, Hawaii, Alaska, and Puerto Rico	\$22,969,708	\$26,209,708	\$3,240,000
Regional research fund	5,387,500	6,512,500	1,125,000
Administration	646,500	781,500	135,000
<u>Total</u>	<u>29,003,708</u>	<u>33,503,708</u>	<u>4,500,000</u>

The estimated distribution of the increase by States follows:

Estimated allotments to State Agricultural Experiment
Stations Under the \$4,500,000 Increase requested for 1958

Alabama	\$99,855
Alaska	19,708
Arizona	28,400
Arkansas	82,872
California	90,035
Colorado	37,534
Connecticut	30,348
Delaware	21,801
Florida	49,064
Georgia	103,340
Hawaii	26,194
Idaho	32,686
Illinois	95,471
Indiana	82,721
Iowa	84,105
Kansas	58,034
Kentucky	103,319
Louisiana	70,332
Maine	33,225
Maryland	41,744
Massachusetts	37,385
Michigan	90,392
Minnesota	81,705
Mississippi	103,126
Missouri	91,049
Montana	31,130
Nebraska	51,145
Nevada	19,737
New Hampshire	24,917
New Jersey	37,002
New Mexico	31,148
New York	90,883
North Carolina	140,041
North Dakota	39,346
Ohio	108,829
Oklahoma	67,085
Oregon	43,406
Pennsylvania	116,703
Puerto Rico	96,263
Rhode Island	20,837
South Carolina	79,316
South Dakota	38,916
Tennessee	104,952
Texas	140,116
Utah	26,970
Vermont	26,595
Virginia	89,616
Washington	49,374
West Virginia	64,849
Wisconsin	82,950
Wyoming	23,429
Total	<u>3,240,000</u>
Regional Research Fund	1,125,000
Administration	135,000
TOTAL	<u><u>4,500,000</u></u>

(2) Increase of \$250,000 for penalty mail costs of State agricultural experiment stations.

Legislative Authorization: The Hatch Act of 1887, as amended (7 U.S.C. 361f, Supp. III), provides for the mailing under penalty indicia by agricultural experiment stations of bulletins, reports, periodicals, reprints of articles, and other publications, including lists of publications necessary for the dissemination of results of research. Mailings include not only those to individual farmers upon request but also to newspapers, libraries, other experiment stations, and organizations interested in results of research and dissemination of such results. This mailing privilege covers third and fourth class matter.

Public Law 705, approved July 14, 1956, amended the Act entitled "An Act to reimburse the Post Office Department for transmission of official Government-mail matter," approved August 15, 1953 (67 Stat. 614), to provide for payment to the Post Office Department by the Department of Agriculture of amounts equivalent to the postage used by agricultural experiment stations under the Hatch Act of 1887, as amended.

Need for Increase: Records of the Post Office Department show that the agricultural experiment stations procured 2,817,274 envelopes, wrappers, labels, and tags in fiscal year 1955. In view of the increased research in recent years, it is estimated that approximately 3,000,000 would be procured in fiscal year 1958.

Based on this estimate the following table indicates the approximate distribution of costs for penalty mail for fiscal year 1958:

	<u>Pieces of Mail</u>	<u>Percent</u>	<u>Unit Rate</u>	<u>Total</u>
Third class mail	2,550,000	85.0	\$0.05	\$127,500
Fourth class mail	450,000	15.0	0.272	122,500
Total	3,000,000	100.0	- -	250,000

Public Law 705 provides that such penalty mail costs are to be paid out of appropriations made to the Department for such purpose. It is anticipated that a supplemental appropriation of \$250,000 will be requested to meet such costs in the fiscal year 1957. Based upon its approval, this budget request actually involves no increase in appropriation.

CHANGES IN LANGUAGE

The estimates include proposed changes in language of this item as follows (new language underscored; deleted matter enclosed in brackets):

- 1 [PAYMENTS TO STATES, HAWAII, ALASKA, AND PUERTO RICO]
- 1 STATE EXPERIMENT STATIONS
- 2 Payments to States, Hawaii, Alaska, and Puerto Rico: For payments to agricultural experiment stations to carry into effect the provisions of the Hatch Act, approved March 2, 1887 (7 U.S.C. 362, 363, 365, 368, 377-379), as amended by the Act approved August 11, 1955 (69 Stat. 671), including administration by the United States Department of Agriculture, [\$29,003,708] \$33,503,708; and payments authorized under section 204 (b) of the Agricultural Marketing Act, the Act approved August 14, 1946 (7 U.S.C. 1623), \$500,000; in all, [\$29,503,708] \$34,003,708.
- 3 Penalty Mail: For penalty mail costs of agricultural experiment stations, under section 6 of the Hatch Act of 1887, as amended, \$250,000.

The first change in language proposes a change in the title of this item from "Payments to States, Hawaii, Alaska, and Puerto Rico," the present title, to "State Experiment Stations."

The second change would establish a subappropriation entitled "Payments to States, Hawaii, Alaska, and Puerto Rico," which would continue to be the source of financing payments to agricultural experiment stations to carry into effect the Hatch Act of 1887, as amended, and payments authorized under section 204(b) of the Agricultural Marketing Act, approved August 14, 1946.

The third change would establish a subappropriation entitled "Penalty Mail" which is proposed in order to provide an appropriation of \$250,000 to be used by the Department to reimburse the Post Office Department for penalty mail costs of agricultural experiment stations under section 6 of the Hatch Act of 1887, as amended (7 U.S.C. 361f, Supp. III), in fiscal year 1958. Section 6 provides for mailings under penalty indicia of bulletins and other publications reporting results of research. However, Public Law 705, approved July 14, 1956 provides for payment to the Post Office Department by the Department of Agriculture of amounts equivalent to the postage used by agricultural experiment stations under the Hatch Act of 1887, as amended.

STATUS OF PROGRAM

General: This appropriation represents the Federal Government's support and encouragement to the State, Territorial, and Puerto Rican agricultural experiment stations which were established as departments of the land-grant colleges pursuant to the provisions of the Hatch Act of 1887.

The State agricultural experiment stations conduct research and experiments along the lines authorized by the Hatch Act and the complementary acts of the States on the many problems constantly encountered in the development of a permanent and sustaining agriculture and in the improvement of the economic and social welfare of the farm family. Because of differences in climate, soil, market outlets, and other local conditions, each State has distinct problems of production and marketing of crops and livestock. The farmers in the individual States naturally look to their State agricultural experiment stations for solution of the State and local problems, and in recent years have requested increased service to help meet changing conditions.

The research programs of the State stations, to be most effective, include participation in regional and national programs. Joint attack by a group of State stations is the most effective and often the only practical approach to problems of common interest. The stations, to an ever increasing extent, are acting together as regional groups to provide cooperative coordinated attacks on problems of regional and national interest. In a similar manner, the research programs of the State agricultural experiment stations and the Department of Agriculture are supplementary and interdependent.

The Federal-grant funds constitute a powerful force in bringing about inter-State cooperation and Federal-State collaboration in the planning and conduct of this over-all program of agricultural research. Therefore, the full impact of the Federal-grant funds cannot be fully evaluated solely on the basis of the amount of funds provided.

Research at the State stations during the fiscal year 1956 included approximately 5,300 specific lines of research financed wholly or in part by Federal-grant funds and about 7,000 lines of research under non-Federal funds. These lines of research are continued as long as they are productive. Fifteen to 18 percent of the research program passes its point of maximum productiveness annually and is replaced by new research on pressing problems.

Distribution of Payments: The Hatch Act, as amended on August 11, 1955, provides that the distribution of Federal payments to States for fiscal year 1955 shall become a fixed base and that any sums appropriated in excess of the 1955 level shall be distributed in the following manner:

- 20% shall be allotted equally to each State.
- not less than 52% shall be allotted to each State as follows:
 - one-half in an amount proportionate to the relative rural population of each State to the total rural population of all States, and
 - one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States.

These populations shall be determined by the last preceding decennial census current at the time each such additional sum is first appropriated. This prevents the State allotments from shifting due to changes in relative rural and farm population.

- not more than 25% shall be allotted to the States for cooperative research in which two or more State agricultural experiment stations are cooperating to solve problems of the agriculture of more than one State.
- 3% shall be available to the Secretary of Agriculture for the administration of this Act.

The amended act retains the requirement for marketing research as it existed in fiscal year 1955 and provides that 20% of the funds appropriated in excess of the 1955 appropriations shall be used for conducting marketing research projects approved by the Department of Agriculture. It also provides that any amount in excess of \$90,000 available for allotment to any State, exclusive of the regional research fund, shall be matched by the State out of its own funds for research, and for the establishment and maintenance of facilities necessary for the prosecution of such research.

The payments authorized by the Hatch Act of 1887, as amended, do not include the payments authorized by Section 204(b) of the Agricultural Marketing Act to State agricultural experiment stations for cooperative projects in marketing research.

Table A shows the distribution of Federal payments to States and non-federal funds for research at State agricultural experiment stations for fiscal year 1956. Table B shows the appropriations for State experiment stations for the fiscal years 1956, 1957, and 1958. Table C shows the approximate distribution of such Federal and non-Federal funds by fields of research.

Selected Examples of Recent Progress

1. Improved fresh concentrated milk developed. The Wisconsin station recently announced that it has developed an improved fresh concentrated milk with long-keeping qualities under refrigeration. Upon the addition of two parts of water to one of the concentrate, the product is reconstituted to an average composition of whole milk. Through cooperation of dairy scientists and marketing specialists, a supply of the new concentrate developed by the experiment station was distributed among 900 families in two Wisconsin cities. Each family was asked to compare the palatability and convenience of reconstituting the concentrate with the use of fresh milk. Fewer than 25 percent of those using it said they liked the product less than fresh milk; 62 percent said they liked it just as well; and 14 percent said they liked it even better. In addition to its apparent favorable acceptance by consumers, the new product has the advantage of lower transportation and handling costs than those involved in distributing milk on a fluid basis. For this reason it offers real incentive to development of markets in distant urban areas where fluid milk prices are high. Plans to begin processing of the product on a commercial scale are being launched by a large dairy marketing firm.

Table A

Distribution of Federal Payments to States and Expenditures from Non-Federal Funds
For Research at State Agricultural Experiment Stations

Fiscal Year 1956

STATE	FEDERAL FUNDS		TOTAL FEDERAL FUNDS	NON-FEDERAL FUNDS	GRAND TOTAL
	Hatch Act, as amended	Section 204(b) Agricultural Marketing Act			
Alabama.....	\$ 551,100	\$ 4,260	\$ 555,360	\$ 1,561,228	\$ 2,116,588
Alaska.....	168,313	4,200	172,513	257,617	430,130
Arizona.....	212,767	4,000	216,767	605,005	821,772
Arkansas.....	465,575	---	465,575	737,568	1,203,143
California.....	528,845	19,900	548,745	7,751,266	8,300,011
Colorado.....	255,588	4,900	260,488	988,833	1,249,321
Connecticut.....	223,903	10,500	234,403	1,032,265	1,266,668
Delaware.....	177,212	3,000	180,212	357,766	537,978
Florida.....	308,800	10,530	319,330	3,374,920	3,694,250
Georgia.....	574,208	12,746	586,954	2,153,169	2,740,123
Hawaii.....	196,497	---	196,497	567,107	763,604
Idaho.....	228,510	4,650	233,160	705,093	938,253
Illinois.....	544,714	3,800	548,514	2,327,943	2,876,457
Indiana.....	477,186	34,010	511,196	2,536,033	3,047,229
Iowa.....	478,218	37,150	515,368	2,728,390	3,243,758
Kansas.....	359,718	14,800	374,518	1,766,777	2,141,295
Kentucky.....	569,102	9,894	578,996	1,068,123	1,647,119
Louisiana.....	413,387	3,500	416,887	2,526,034	2,942,921
Maine.....	236,311	22,500	258,811	360,902	619,713
Maryland.....	281,865	13,650	295,515	714,318	1,009,833
Massachusetts.....	266,268	3,200	269,468	562,300	831,768
Michigan.....	521,243	58,200	579,443	2,186,365	2,765,808
Minnesota.....	463,160	---	463,160	2,544,826	3,007,986
Mississippi.....	555,021	18,000	573,021	1,351,963	1,924,984
Missouri.....	508,765	36,475	545,240	853,608	1,398,848
Montana.....	224,208	---	224,208	1,086,632	1,310,840
Nebraska.....	322,285	---	322,285	1,385,596	1,707,881
Nevada.....	167,122	---	167,122	112,960	280,082
New Hampshire.....	194,387	---	194,387	172,944	367,331
New Jersey.....	260,716	10,500	271,216	1,648,055	1,919,271
New Mexico.....	223,313	---	223,313	412,399	635,712
New York.....	536,961	5,800	542,761	4,772,872	5,315,633
North Carolina.....	748,005	---	748,005	1,789,751	2,537,756
North Dakota.....	263,561	---	263,561	874,537	1,138,098
Ohio.....	615,147	13,750	628,897	1,764,813	2,393,710
Oklahoma.....	404,296	23,500	427,796	1,498,735	1,926,531
Oregon.....	287,280	14,800	302,080	1,922,418	2,224,498
Pennsylvania.....	681,007	5,572	686,579	1,425,009	2,111,588
Puerto Rico.....	511,244	---	511,244	1,304,584	1,815,828
Rhode Island.....	174,050	3,500	177,550	151,669	329,219
South Carolina.....	454,224	---	454,224	739,310	1,193,534
South Dakota.....	261,799	7,000	268,799	580,317	849,116
Tennessee.....	574,115	2,500	576,615	897,620	1,474,235
Texas.....	763,561	26,275	789,836	3,316,942	4,106,778
Utah.....	203,190	5,000	208,190	645,181	853,371
Vermont.....	199,923	---	199,923	137,913	337,836
Virginia.....	513,179	2,368	515,547	1,240,806	1,756,353
Washington.....	316,352	30,570	346,922	2,294,078	2,641,000
West Virginia.....	397,887	2,500	400,387	379,054	779,441
Wisconsin.....	472,939	---	472,939	3,534,503	4,007,442
Wyoming.....	185,131	12,500	197,631	489,969	687,600
Total.....	19,522,158	500,000	20,022,158	76,198,086	96,220,244
Regional Research Fund.....	4,199,815	---	4,199,815		4,199,815
Administration.....	416,245	---	416,245		416,245
Unobligated balance.....	115,490		115,490		115,490
Total.....	24,253,708	500,000	24,753,708	76,198,086	100,951,794



Table B
Appropriations for State Experiment Stations
Fiscal Years 1956-1958

State	Fiscal Year 1956	Fiscal Year 1957	Fiscal Year 1958 (Estimated)
Payments to States, Hawaii, Alaska, and Puerto Rico:			
Alabama.....	\$ 551,100	\$ 656,503	\$ 756,358
Alaska.....	168,313	189,115	208,823
Arizona.....	212,767	242,744	271,144
Arkansas.....	465,575	553,050	635,922
California.....	528,845	623,881	713,916
Colorado.....	255,588	295,207	332,741
Connecticut.....	223,903	257,849	288,197
Delaware.....	177,212	200,374	222,175
Florida.....	308,800	373,013	422,077
Georgia.....	574,208	683,290	786,630
Hawaii.....	196,497	225,902	252,096
Idaho.....	228,510	263,396	296,082
Illinois.....	544,714	646,678	742,149
Indiana.....	477,186	565,279	648,000
Iowa.....	478,218	566,996	651,101
Kansas.....	359,718	420,976	479,010
Kentucky.....	569,102	678,160	781,479
Louisiana.....	413,387	487,626	557,958
Maine.....	236,311	271,382	304,607
Maryland.....	281,865	326,397	368,141
Massachusetts.....	266,268	305,729	343,114
Michigan.....	521,243	616,658	707,050
Minnesota.....	463,160	549,404	631,109
Mississippi.....	555,021	663,876	767,002
Missouri.....	508,765	604,872	695,921
Montana.....	224,208	257,082	288,212
Nebraska.....	322,285	376,272	427,417
Nevada.....	167,122	187,956	207,693
New Hampshire.....	194,387	220,689	245,606
New Jersey.....	260,716	299,774	336,776
New Mexico.....	223,313	256,191	287,339
New York.....	536,961	633,010	723,893
North Carolina.....	748,005	895,826	1,035,867
North Dakota.....	263,561	305,093	344,439
Ohio.....	615,147	730,022	838,851
Oklahoma.....	404,296	475,107	542,192
Oregon.....	287,280	333,098	376,504
Pennsylvania.....	681,007	804,192	920,895
Puerto Rico.....	511,244	617,032	713,295
Rhode Island.....	174,050	196,045	216,882
South Carolina.....	454,224	537,946	617,262
South Dakota.....	261,799	302,878	341,794
Tennessee.....	574,115	684,898	789,850
Texas.....	763,561	911,461	1,051,577
Utah.....	203,190	231,660	258,630
Vermont.....	199,923	230,244	256,839
Virginia.....	513,179	607,773	697,389
Washington.....	316,352	370,397	419,771
West Virginia.....	397,887	466,346	531,195
Wisconsin.....	472,939	560,498	643,448
Wyoming.....	185,131	209,861	233,290
Subtotal.....	19,522,158	22,969,708	26,209,708
Regional Research Fund.....	4,199,815	5,387,500	6,512,500
Administration.....	416,245	646,500	781,500
Unobligated balance.....	115,490	--	--
Payments authorized for Marketing Research, Section 204(b), Agricultural Marketing Act ^{a/}	500,000	500,000	500,000
Subtotal.....	24,753,708	29,503,708	34,063,708
Penalty Mail:			
Reimbursement to Post Office Department for penalty mail costs of State experiment stations Directors.....	--	250,000 ^{b/}	250,000
Grand Total.....	24,753,708	29,753,708	34,253,708

^{a/} Allotted to States by projects on the basis of recommendations by a committee of experiment station directors and approved by the State Experiment Stations Division, Agricultural Research Service.

^{b/} Anticipated supplemental appropriation which will be requested for fiscal year 1957.



TABLE C

Distribution of Federal-Grant Payments to States and Non-Federal Funds
by Fields of Research at State Agricultural Experiment Stations

Fiscal Year 1956		
Field of Research	Federal-Grant Funds	Non-Federal Funds
Agricultural Engineering	\$ 1,163,000	\$ 2,972,000
Animal Diseases and Parasites	1,187,000	4,115,000
Economics of Production	1,284,000	2,134,000
Field Crop Production	3,197,000	11,582,000
Horticultural Crop Production	1,284,000	9,449,000
Human Nutrition and Home Economics	1,792,000	2,286,000
Insect Control	1,332,000	5,181,000
Livestock Production	4,215,000	18,669,000
New and Expanded Uses of Agricultural Products	1,550,000	3,505,000
Plant Diseases	1,502,000	5,181,000
Soil and Water Conservation	2,349,000	7,467,000
Forestry Production	218,000	914,000
Marketing (Domestic)	3,148,973	2,743,086
Total Obligations	\$24,221,973	\$76,198,086
Administration	416,245	---
Unobligated Balance	115,490	---
Total Appropriation	\$24,753,708*	\$76,198,086

*Includes \$500,000 Section 204(b) Agricultural Marketing Act Funds



2. Corn silage cuts sow feed costs. The Indiana station successfully carried pregnant sows through the gestation period on a ration of corn silage supplemented with protein, minerals, and vitamins. Feeding costs on the silage were 20 percent less than on a basal ration of corn, oats, and alfalfa meal. In addition, the silage-fed sows farrowed larger litters and weaned an average of one more pig per litter. The saving in feed costs was \$4 per sow. Indiana station scientists estimate that if only one-half the Indiana sows carrying litters from December to May were fed on the corn-silage ration, feed costs would be reduced by over a million dollars.
3. Pitting and reseeded speeds range recovery. The Texas station has shown that pitting range land increases moisture penetration, stimulates native plant growth, and serves as a method of seedbed preparation for grass reseeding. These methods had to be developed experimentally to help ranchmen restore several million acres of land in west Texas which had been seriously depleted by drought. The staggered pattern of pits is made by eccentric or shaped disc plows. Pits are usually 4 to 6 inches deep and 3 to 4 feet long. An acre of pitted land will store from 3 to 3.5 inches of rainfall. In the Texas research, seeding with native grasses following pitting proved more successful in re-establishing ranges than other methods of seedbed preparation.
4. Colloidal sediment linings save water. The Colorado station installed several experimental linings using bentonite as a sealing agent in irrigation ditches. With bentonite, 7 miles of canal can be sealed for the same amount of money it takes to line 1 mile of canal with the cheapest kind of lining now in common use. Under the Colorado method, the bentonite is stirred into colloidal suspension by an air compressor and taken down-stream by the flowing water. When it reaches the leaky pores and cracks of the canal bed and sides, these are sealed tight. Ordinarily the value of the water saved during the first year pays for the cost of the bentonite and labor. In one stretch of 12.5 miles of canal, money value of water saved in 1 year was \$79,500.
5. Reducing formation of rancid milk in pipelines studied. Combine milking means greater efficiency on dairy farms and cleaner milk. However, until recently a major technical problem under the combine system was that of lipolysis, or formation of rancid milk. This was shown by the Minnesota station to be most prevalent in milk from farms using pipelines. The California station distinguished between 2 types of the enzyme known as lipase--that of normal milk, which normally does not cause rancidity, and active lipase, often present in milk from cows about ready to go dry, which causes rancidity. But when lipase from warm normal milk is agitated considerably, as in pipeline milkers, it also becomes rancid. Research at the Minnesota, Michigan, and other stations showed that lipase formation in normal milk can be prevented or materially reduced by stopping air leaks and avoiding unnecessary agitation. Station scientists and industry are now working on practical methods of overcoming this major cause of lipolysis in combine milking.
6. Forage harvesting efficiency studied. Management studies at agricultural experiment stations provide farmers with comparative guides on the efficiency of harvesting forage with different kinds of equipment and methods. The North Carolina station found that the hayloader-

power pack method cost least for 25 tons of hay equivalent. Custom harvesting of silage was least expensive. On larger farms having 100 tons or more to harvest, the forage harvester and blower method cost least. Even greater savings were made on farms where corn silage made up the bulk of total forage harvested.

In comparative studies of labor needs with different types of equipment, the Mississippi station found that the man hours of labor required to harvest 100 tons of silage and put this tonnage in an upright silo varied from 137 with use of a one-row binder to 81 with a one-row field harvester. In baling hay, labor requirements per 100 bales varied from 14 man hours with use of a stationery baler to $1\frac{1}{2}$ with use of an automatic pick-up baler that had auxiliary power.

Research by the Idaho station shows that the most efficient and profitable combination for providing forage on dairy farms is a method combining sprinkler irrigated pasture, dry-land hay, and silage-chopped hay harvesting. This method allowed a one-man dairy to handle a maximum of 43 cows and earn \$5,500 labor income.

7. Repellent protects honeybees in fields sprayed with chemicals. Honeybees are one of man's greatest benefactors. They are the most successful plant pollinators in the insect world. Bees are essential, economically, to accomplish fertilization of plants which provide us with many of our fruits, vegetables, and seed crops. Bee colonies suffer heavy mortality each year in orchards, fields, and crops treated with pesticides for control of injurious insects and diseases. The Oklahoma station is experimenting with the use of repellents which will temporarily keep bees from working in fields sprayed with poisonous chemicals. A number have been tried. Some have been found to repel bees effectively for periods lasting from 8 to 48 hours.
8. Irradiation of foods studied. There is considerable speculation among food scientists as to whether atomic irradiation offers practical methods for preventing spoilage of perishable foods. Experiments carried on at the Michigan station point to substerilization as showing considerable promise. Scientists have applied dosages in the range of 10,000 to 50,000 rep. (roentgen-equivalent-physical, a unit of irradiation measurement) to destroy trichinae and flukes in meat, insects in cereal and grain products, and also to achieve partial surface sterilization of fresh and packaged meats without any apparent detrimental side effects. Irradiation has also delayed sprouting in onions and potatoes. Before any practical application of the methods developed in the Michigan experiments can be made, it will be necessary to establish beyond doubt that food treated in this way has no harmful side effects on those who eat it.
9. Virus is cause of internal tomato browning. A puzzling disorder of tomatoes at ripening time has plagued tomato growers in the Eastern United States since 1946. The fruits of plants that are apparently healthy start browning internally and become worthless for eating and marketing. Outbreaks of this phenomenon have been spontaneous in tomato growing areas, sometimes causing financial losses running into thousands of dollars. The Pennsylvania station has established that the cause of this browning is a strain of tobacco mosaic virus. Infection seems to occur just as the first fruits begin to ripen. A

concentration of virus then follows in the tomato fruits until some of the cells in the outer wall of the fruit are killed. The fruits are easily identified by a brownish discoloration radiating from the stem end. This is often followed by a corkiness in the walls.

10. Prevention of parakeratosis in swine studied. Animals, like plants, suffer from nutritional imbalance. This is emphasized in results obtained to date in experiments that the Alabama, Michigan, Minnesota and other stations are directing at the cause and prevention of parakeratosis. This disease resembles mange, but in advanced stages it causes far heavier encrustation of the skin and may result in death. It occurs most frequently among pigs in the weanling to 125-pound age group when they are fed in close confinement on rations including calcium and phosphorus at higher than recommended levels. Station scientists have demonstrated that addition of zinc carbonate to the ration overcomes the condition. While this is very helpful to farmers and feed manufacturers, research is being continued to learn more about the interrelationship of zinc and calcium in rations.
11. Good management cuts poultry production costs. The challenge of intense competition in poultry farming is best met through using recommended management skills. The Michigan station, for example, found that the cost of raising pullets to maturity ranged from \$1.95 per bird to \$4.16, with the lowest cost on those farms where every recommended skill was put to work. The best management practice, when compared with the poorest, reduced the amount of feed used per bird by 21 pounds. The North Carolina station showed that production of hatching eggs per hen could be increased 24 percent by starting flocks in the July-September period rather than in April-June. In the production of market eggs, the Mississippi station learned that application of practices recommended to get a higher rate of lay and lower death losses resulted in triple increases for labor returns when compared with farms on which average levels of practices were being followed.
12. Biological control of spotted alfalfa aphid studied. The California station has found 3 parasites giving promise of eventual biological control of the spotted alfalfa aphid. This insect is causing great financial havoc in important alfalfa-growing sections of the southern tier of States. Although insecticidal sprays have been developed, their application is costly. Acreages not sprayed contribute to renewed buildup of the pest. A species of fungi of the genus Empusa is very effective under certain field conditions. It has completely controlled heavy infestations. Special efforts are under way to develop better outdoor production methods that will be adaptable to other States. Both fungi and insect parasites are being distributed in California and other western States.
13. Survey made of meat grade preferences of 1,500 adults. Adults have decided differences in preferences for the meat they buy. This was learned in interviews with 1,500 adults in different parts of metropolitan St. Louis, conducted by the Missouri station under funds available under section 204(b) of the Agricultural Marketing Act. Based on physical characteristics of color of fat, amount of marbling, color of lean, amount of external fat, texture and amount of bone, their preferences were divided as follows: 31.7 percent favored the prime grade, 24.3 the choice, 21.9 the good, 15.4 the commercial grades

of loin steak and chuck roasts, and 6.7 percent indicated no preference (at equal prices). Most consumer preferences were for not too much fat, a good color of lean, and a small amount of bone. A majority said tenderness was the most important eating characteristic. Flavor was emphasized by a significant minority. These buying influences are not taken into account enough under customary methods of meat merchandising. Grading systems do not reflect customer's preferences to the extent that these preferences actually enter into the marketing of meat. Similar consumer preference studies dealing with meat marketing are under way at the Arizona, California, Colorado, Michigan, New Jersey, Oregon, Texas, and Washington stations.

Regional Research Fund

For the conduct of research in which two or more State agricultural experiment stations are cooperating to solve problems that concern the agriculture of more than one State, there is available the "Regional Research Fund" authorized by Section 3(c)(3) of the Hatch Act, as amended, (formerly Section 9(b)(3) of the Bankhead-Jones Act). This fund amounted to \$4,200,000 in 1956 and \$5,387,500 in 1957. Of the sums appropriated in excess of the 1956 level, not more than 25 percent is allotted to this fund. Allotments are made to stations on the basis of projects recommended by the Committee of Nine established by the Act to represent the State stations.

The following are examples of work carried on in 1956 under this fund:

1. Bone density standards for adolescents developed. In regional research carried on cooperatively with the State Board of Health and the Department of Agriculture, the Montana station has developed bone density standards for adolescent boys and girls. These provide a practical yardstick for assessing nutritional status, particularly for mineral nutrition over long periods of time. Bone density studies are less expensive in terms of time, personnel, and equipment than the generally used chemical analysis of mineral content of food and excreta to determine amounts retained by human beings for body functions. The bone density data being compiled at the Montana station will eventually provide standards for human beings from 5 to 95 years of age.
2. Possible forerunner of hardened arteries studied. Nine of the western State experiment stations are engaged in cooperative research with State and county health departments in order to learn more about nutritional status of population groups. In one of the studies the California station, working with 573 men and women 50 years of age and older, learned that extreme underweight or overweight (20 percent or more) in men but not in women was associated respectively with low and high serum cholesterol levels. Serum cholesterol levels were also positively related to dietary intakes of fat and cholesterol. No such relationship was seen in groups with smaller deviations from the normal weight. This study of the California station is of special interest because of the increasing emphasis on the relationship between serum cholesterol level, particularly in aging persons, and the development of hardened arteries.

3. Shell-less eggs marketed in plastic containers. In a project contributing to northeast regional research on egg marketing, a technique has been developed by the New York (Cornell) station for merchandising eggs in shell-less form through use of plastic containers. This offers egg handlers and others an opportunity to realize higher returns for eggs that normally are sold at relatively low prices. Eggs packaged in plastic containers are less susceptible to breakage, require about one-fourth less space for storage or shipping, and weigh 10 to 20 per cent less than shell eggs in conventional containers.

This method of packaging makes it possible to market eggs with checked or cracked shells, thin or irregularly shaped shells, or eggs with minor internal defects, which in no way affect the internal quality, at prices commensurate with those of regular Grade A eggs. It offers an opportunity to increase the market for pullet or other small eggs, which normally are sold at prices well below their relative value, by packaging two of these small eggs together, thus making an attractive double yolked egg. This technique also eliminates many of the candling inefficiencies normally encountered in egg marketing by removing the element of human error in determining the internal quality of an egg. It will permit the complete mechanization of egg-grading operations and increase the accuracy, speed, and efficiency of grading.

4. Fumigation controls sting nematode. Control of nematodes is assuming increasing importance in successful crop production. A practical control measure now being given wide attention by agricultural experiment stations is that of fumigation. Economically profitable use of fumigants, however, requires scientific information about: (1) the specific kind of nematode affecting given crops and (2) the buildup of such nematodes in a given acreage. The Georgia station reports effective control of the sting nematode with two different commercial fumigants. Nonfumigated acreage of upland cotton produced 1,038 pounds of seed cotton per acre, while the fumigated acreage produced 1,930 and 2,145 pounds of seed cotton, respectively, for the two different fumigants used.

(c) Diseases of Animals and Poultry

	<u>Eradication activities</u>	<u>Research</u>
Appropriation Act, 1957 and Base for 1958	a/	\$3,500,000
Budget Estimate, 1958	a/	3,640,000
Increase (for contribution to the retire- ment fund pursuant to P. L. 854)	- -	+ 140,000

PROJECT STATEMENT

Project	1956	1957 (estimate 1)	Retirement Costs (P.L. 854)	1958 (estimated)
1. Eradication activities:				
a. Eradication of vesicular exanthema of swine	\$2,092,180	\$1,550,000	a/	a/
2. Research	1,898,256	3,500,000	+140,000(1)	3,640,000
Unobligated balance	65,362			
Total retirement costs (P.L. 854)	- -	- -	[+140,000]	[140,000]
Total available or estimate	4,055,798	5,050,000	+140,000	3,640,000
Transferred to "Salaries and expenses, Agricultural Research Service"	+ 47,000	- -		
Prior year balances avail- able	- 364,798	- 53,619		
Transfers from Commodity Credit Corporation	-1,793,000	-1,496,381		
Appropriation or estimate ..	1,945,000	3,500,000		

a/ Eradication activities financed by transfers from other accounts (Commodity Credit Corporation) as authorized in the annual appropriation act. Transfer of not to exceed \$1,550,000 for eradication of vesicular exanthema of swine authorized for fiscal year 1957 and proposed at not to exceed \$1,270,000 for fiscal year 1958. An estimate for 1958 to reimburse the Commodity Credit Corporation for transfers through June 30, 1955, and interest through June 30, 1957, is explained elsewhere in these justifications.

b/ Excludes transfer of \$12,000 for fiscal year 1956 to the appropriation, "Salaries and Expenses, Agricultural Research Service, research" under the authority of section 702(b) of the Department of Agriculture Organic Act of 1944 for research to support the vesicular exanthema eradication program.

INCREASE

(1) An increase of \$140,000 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes.

ERADICATION ACTIVITIES

Eradication of Vesicular Exanthema in Swine.

It is estimated that in fiscal year 1958, not to exceed \$1,270,000 will be transferred from the Commodity Credit Corporation for eradication of vesicular exanthema of swine. This is a reduction of \$280,000 as compared with the authorization of \$1,550,000 provided in the 1957 appropriation act. The estimated costs of the program for fiscal years 1956, 1957 and 1958 are distributed as follows:

	Fiscal Year		
	1956	1957 (estimated)	1958 (estimated)
Operating expenses:			
Enforcement	\$1,749,838:	\$1,189,000:	\$909,000
Diagnosis	1,414:	11,000:	11,000
Inspection at stockyards ...	267,252:	270,000:	270,000
Total, Operating expenses	2,018,504:	1,470,000:	1,190,000
Indemnities	81,403:	80,000:	80,000
Total	2,099,907:	1,550,000:	1,270,000

For fiscal year 1957, transfers of funds for the vesicular exanthema program are being made as follows:

"Commodity Credit Corporation"	\$1,496,381
Unobligated balance in 1956	53,619
	<u>1,550,000</u>

During 1956 infection was confined to California. California State and Federal authorities agreed that the herds showing infection should be slaughtered, the premises cleaned and disinfected, and garbage fed to hogs on these premises should be properly heat treated. All of these measures were carried out and the last reported outbreak of vesicular exanthema in California occurred in November 1955. The California Garbage Cooking Law became effective January 1, 1956 and complete compliance is reported. Close surveillance over an extended period of time must be maintained to discover promptly any new outbreak of the disease, since the disease has been known to recur with great virulence in a state after there have been no reports of its presence within the state for many months. For example, there were renewed outbreaks of vesicular exanthema in New Jersey in August and November 1956 after approximately 2 years without an apparent outbreak. Consequently, it is essential that inspection be continued at a level adequate to detect the disease should it reoccur.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

Eradication activities: For expenses necessary in the arrest and eradication of foot-and-mouth disease, rinderpest, contagious pleuro-pneumonia, or other contagious or infectious diseases of

- animals, or European fowl pest and similar diseases in poultry,
- 1 [including the payment of claims growing out of destruction of animals (including poultry) affected by or exposed to, or of materials contaminated by or exposed to, any such disease, when there has been compliance with all lawful quarantine regulations,] and for foot-and-mouth disease and rinderpest programs ****, the Secretary may transfer from other appropriations or funds available to the bureaus, corporations, or agencies of the Department such sums as he may deem necessary, but not to exceed [\$1,550,000] \$1,270,000 for eradication of vesicular exanthema of swine, to be available only in an emergency which threatens the livestock or poultry industry of the country, and any unexpended balances of funds transferred under this head in the next preceding fiscal year shall be merged with such transferred amounts: Provided,
 - 2 [That, except for payments made pursuant to said Act of February 28, 1947, the payment for animals may be made on appraisement based on the meat, egg-production, dairy, or breeding value, but in case of appraisement based on breeding value no appraisement of any animal shall exceed three times its meat, egg-production, or dairy value and, except in case of an extraordinary emergency to be determined by the Secretary, the payment by the United States shall not exceed one-half of any such appraisements: Provided further,] That this appropriation shall be subject to applicable provisions contained in the item "Salaries and expenses, Agricultural Research Service".

- Research: For expenses necessary for research authorized by the
- 3 Act of April 24, 1948 (21 U.S.C. 113a), [\$3,500,000] including improvements, alterations of buildings, and not to exceed \$105,000 for the construction of buildings, except for replacement purposes, \$3,640,000: Provided, That the cost of altering any one building during the fiscal year shall not exceed \$3,750 or five per centum of its cost, whichever is greater.

The first change proposes:

- (a) Deletion of the language authorizing the payment of claims growing out of destruction of animals (including poultry) affected by or exposed to, or of materials contaminated by or exposed to, contagious diseases. This language is no longer necessary since authority to pay such claims is now provided by the Department of Agriculture Organic Act of 1956, (P.L. 979) approved August 3, 1956.
- (b) Deletion of the reference to "compliance with all lawful quarantine regulations" as a condition for the payment of claims for the destruction of animals and materials incident to the control and eradication of contagious animal diseases. The Department would continue to require compliance with quarantine regulations as a condition for payment of claims and the inclusion of such a condition in appropriation language may prevent payment of a meritorious claim when there has been substantial but not exact compliance with the regulations.

The second change proposes deletion of the proviso authorizing payment of claims for the destruction of animals in amounts based on appraisement of meat, egg-production, dairy or breeding value. The Act of May 29, 1884, as amended (21 U.S.C. 114a) authorizes the payment of claims for the destruction of animals in accordance with such regulations as the Secretary of Agriculture may prescribe. The legislative history of the Department of Agriculture Organic Act of 1956 with respect to section 2, which amends section 11 of the Act of May 29, 1884 concerning indemnities growing out of destruction of animals (including poultry), and of materials does not indicate any intention on the part of the Congress to limit the authority in basic law for the Secretary to prescribe the basis for the payment of indemnities to meet emergencies which threaten the livestock industry.

Since the proviso may possibly be subject to a legislative point of order and since it serves no purpose in view of the existing regulations issued pursuant to the basic law, it is recommended for deletion. This change would not affect the present procedures and practices with respect to the payment of indemnities.

The third change proposes addition of specific language covering construction and alterations of buildings and improvements required for this research program. Funds provided by the Urgent Deficiency Act, 1952 for the construction of buildings and improvements at Plum Island, N. Y. will all be obligated by the end of fiscal year 1957. Because of the isolated location of the research station and of the nature of the research, it is essential that it be possible to undertake promptly construction, alterations, and improvements necessary for the progress of the research or required because of fire, storm, or other damage. Experience already acquired because of storm and fire damage emphasize the urgent need for such authority. Construction costs on the island are high because of its isolated location. The language is proposed because it appears that such construction, alterations, and improvements cannot be undertaken unless specifically authorized since section 703 of the Department of Agriculture Organic Act of 1944 (5 U.S.C. 565a) provides as follows:

"The Department of Agriculture is authorized to erect, alter, and repair such buildings and other public improvements as may be necessary to carry out its authorized work; Provided, That no building or improvement shall be erected or altered under this authority unless provision is made therefor in the applicable appropriation and the cost thereof is not in excess of limitations prescribed therein."

The language would provide for any emergency need for replacement of buildings which may be possible within available funds. It would also provide not to exceed \$105,000 for construction of new buildings. It is estimated that this authority would be used in fiscal year 1958 for the construction of small animal breeding quarters, machinery and vehicle storage facilities, and a quonset-type warehouse at Orient Point.

Alterations are limited to \$3,750 or five percent of the cost of a building whichever is greater, the same amounts as proposed under "Salaries and Expenses" for fiscal year 1958. No limitation is placed on improvements other than the construction of buildings which is now the case under "Salaries and Expenses". Such improvements would include varying needs which would arise from time to time in connection with harbor and shore improvements, fencing, grading, etc.

STATUS OF PROGRAM

RESEARCH

Initiation of Program: Foot-and-mouth disease research was initiated on Plum Island, New York, in facilities transferred to the Department of Agriculture by the Department of the Army, July 1, 1954. Research on this disease was authorized by the Act of April 24, 1948 (21 U.S.C. 113a).

The two Departments had been jointly engaged in research on Plum Island for a short period of time prior to the transfer of these facilities. The joint work was terminated June 30, 1954, and the facilities, valued at about \$5,000,000, were declared excess to Department of the Army needs. The transfer of these facilities by the Army enabled the Department of Agriculture to undertake some of the urgently needed research at once instead of waiting for completion of the new facilities by the Department for which Congress had appropriated special funds.

During the construction of the main laboratory a serious fire in November 1955 made it necessary for the contractor to demolish and rebuild about 25 percent of the laboratory. This resulted in a delay in occupying the building of nearly one year. The main laboratory is expected to be available for use in January 1957, after which the mechanical features will be tested and safety tests will be made using the virus of vesicular stomatitis, which is clinically similar to foot-and-mouth disease.

Current research:

1. Laboratory test for foot-and-mouth disease developed. An indirect complement-fixation test has been investigated that promises to provide a practical method of detecting antibodies in the blood of cattle previously exposed to foot-and-mouth disease. Prior to this development laboratory tests of this type could not be depended upon.
2. Comparative susceptibility of three age groups of cattle to foot-and-mouth disease studied. It was determined that there was no difference in the susceptibility to Type A virus of foot-and-mouth disease of 2-, 6- and 18-month old cattle. Also, there was no indication of difference between breeds and grades. These results, if confirmed with other virus types, are expected to result ultimately in the purchase of less expensive cattle for this research program.
3. Laboratory stock material prepared. Large quantities of virus-bearing tissue of cattle, swine, and guinea pig origin and hyper-immune sera are required for conducting diagnostic tests and for other research uses. Since work on only one type of virus can be

conducted at any one time in the former Army facilities, it was necessary to produce a large stock of materials for this purpose. Quantities of virus produced on cultured bovine kidney cells have also been stored for research use. This material will also be available for use in the new facilities.

4. Usefulness of unweaned mice as test animal in diagnosing foot-and-mouth disease confirmed. Work of the past year indicates antibodies can be detected in serum as soon as six days after an animal has been infected with the disease.

ERADICATION ACTIVITIES

Eradication of Vesicular Exanthema in Swine.

Encouraging progress was made in this eradication program in fiscal year 1956. Major accomplishments were as follows:

1. All known infected and exposed swine in California were disposed of, and all infected premises were cleaned and disinfected.
2. California authorities agreed to dispose promptly of any new infection by slaughter and special processing.
3. Through the combined efforts of Federal and State authorities, the number of swine being fed raw garbage was gradually decreased each month. Semi-monthly inspections of swine on garbage feeding premises were made on about 90% of these premises, as compared to 83% in 1955.
4. Additional inspection of swine at public stockyards was emphasized to aid in preventing the interstate spread of the disease.
5. Regulations were strictly enforced governing the interstate movements of swine and swine products from states considered to have the largest potential for recurrence of the disease.

In fiscal year 1957, in many States, inspections at garbage feeding establishments have been reduced to a monthly basis, and the area of operations covered by each inspector has been enlarged. The States are being encouraged to make a greater number of personnel available for this work.

The major goals for the fiscal year 1957 include a continuation of close surveillance over garbage feeding premises, added emphasis on the reporting of the incidence of the disease, the enactment of garbage cooking laws in New Jersey and Connecticut, now the only two States not having such laws, and more rigid enforcement of existing laws.

The following table shows the costs of this program by fiscal years, since an emergency was declared on August 1, 1952:

Fiscal Year	Operating Expenses	Indemnities	Grand Total
1953	\$ 550,554	\$ 1,662,479	\$2,213,033 <u>a/</u>
1954	1,342,892	255,089	1,597,981
1955	1,916,894	165,081	2,081,975
1956	2,010,777	81,403	2,092,180
1957(Est.)	1,470,000	80,000	1,550,000
1958(Est.)	1,190,000	80,000	1,270,000

a/ Does not include indirect costs at public stockyards or at serum plants for overtime, communication services, etc.
Does include \$460,647 made available under "Salaries and Expenses, Agricultural Research Service."

Federal indemnity for the fiscal year 1956 was limited to the State of California where \$81,403 was paid for 10,923 swine.

The attached table and charts illustrate the progress of the vesicular exanthema eradication program.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
ANIMAL DISEASE ERADICATION BRANCH
WASHINGTON 25, D. C.

NATIONAL STATUS ON CONTROL OF GARBAGE-FEEDING OF SWINE AS OF
NOVEMBER 30, 1956

State	Premises Feeding Garbage	Number of Swine Fed Garbage	Premises Feeding Cooked Garbage	Number of Swine Fed Cooked Garbage	Number of Swine Fed Raw Garbage	Monthly Inspections
Alabama	467	12,723	467	12,723	0	99%
Arizona	126	11,149	116	11,031	118	100%
Arkansas	364	14,679	348	14,283	396	91%
California	381	224,913	381	224,913	0	100%
Colorado	101	42,130	101	42,130	0	90%
Connecticut	147	21,418	27	4,093	17,325	90%
Delaware	23	1,870	22	1,770	100	100%
Florida	837	44,997	796	44,060	937	100%
Georgia	533	29,215	522	28,216	999	92%
Idaho	101	6,681	101	6,681	0	100%
Illinois	231	29,753	231	29,753	0	100%
Indiana	88	10,001	88	10,001	0	95%
Iowa	77	9,446	77	9,446	0	100%
Kansas	287	15,841	287	15,841	0	100%
Kentucky	348	15,121	345	15,103	18	100%
Louisiana	597	16,003	597	16,003	0	100%
Maine	131	11,473	126	11,360	113	57%
Maryland	143	18,187	122	17,329	858	100%
Massachusetts	508	134,189	455	127,176	7,013	98%
Michigan	117	18,882	117	18,882	0	53%
Minnesota	101	16,212	101	16,212	0	100%
Mississippi	147	8,137	144	7,897	240	100%
Missouri	81	16,349	81	16,349	0	100%
Montana	26	5,765	26	5,765	0	100%
Nebraska	75	4,924	75	4,924	0	79%
Nevada	33	3,266	31	3,262	4	82%
New Hampshire	110	7,329	83	6,659	670	83%
New Jersey	372	197,011	143	147,016	49,995	96%
New Mexico	103	5,004	91	4,560	444	48%
New York	276	38,524	273	38,331	193	92%
North Carolina	908	36,602	908	36,602	0	100%
North Dakota	16	1,520	16	1,520	0	100%
Ohio	546	34,725	546	34,725	0	99%
Oklahoma	578	16,865	530	15,852	1,013	92%
Oregon	34	6,054	32	5,969	85	100%
Pennsylvania	255	45,769	252	45,675	94	100%
Rhode Island	60	9,279	57	8,769	510	98%
South Carolina	1,003	22,087	980	21,659	428	90%
South Dakota	50	3,805	50	3,805	0	100%
Tennessee	556	21,124	550	20,380	744	82%
Texas	1,186	88,823	143	39,574	49,249	100%
Utah	49	5,507	36	4,528	979	78%
Vermont	67	5,365	57	4,698	667	100%
Virginia	395	32,895	375	32,700	195	100%
Washington	68	10,314	63	9,637	677	100%
West Virginia	240	8,702	236	8,177	525	51%
Wisconsin	76	10,892	75	10,892	13	92%
Wyoming	37	2,721	34	2,710	11	100%
TOTALS	13,055	1,354,241	11,314	1,219,641	134,613	25 - 100% 23 - Less than 100%

87% of premises feeding cooked garbage.

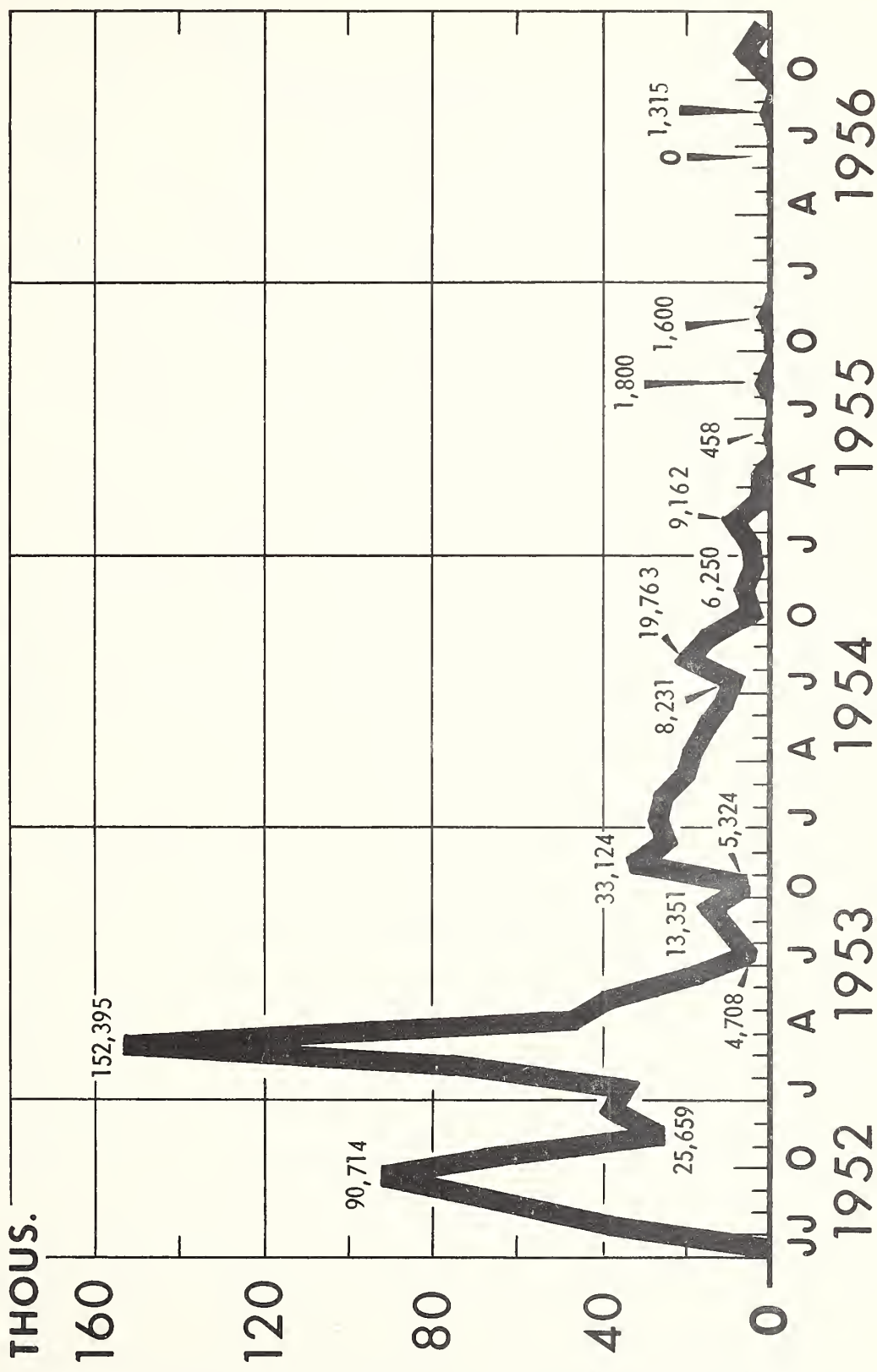
90% of swine fed cooked garbage.

10% of swine fed raw garbage.

39 States reporting 90% to 100% monthly inspection.

No Infection reported during the month.

V.E. INFECTED-EXPOSED SWINE

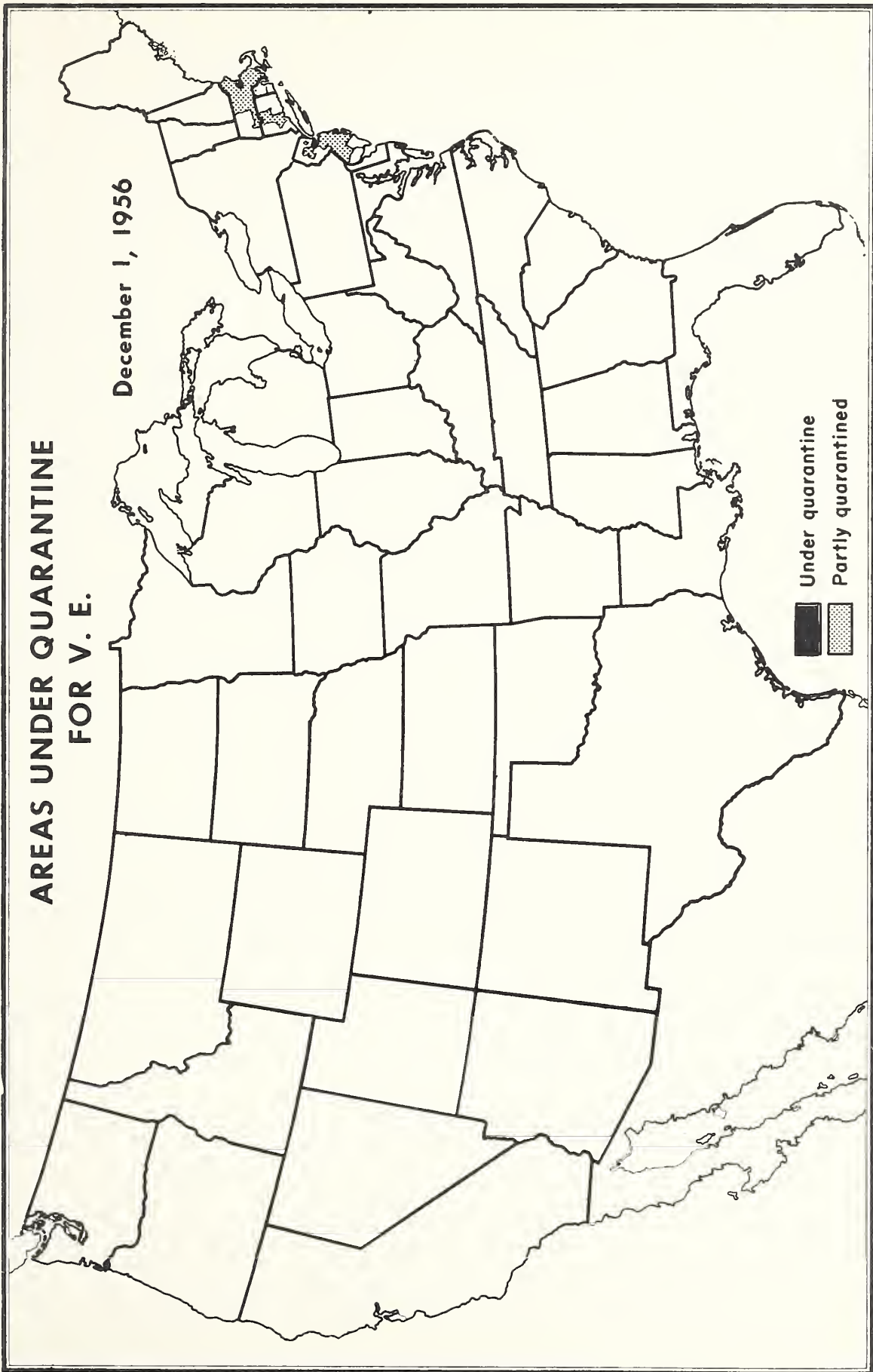


MAY, AUGUST, AND NOVEMBER 1955 CHARTS INCLUDED REPEATED INFECTION ON SOME PREMISES.
CORRECTIONS MADE ON THIS CHART

AREAS UNDER QUARANTINE FOR V. E.

December 1, 1956

Under quarantine
Partly quarantined



Foot-and-Mouth Disease Eradication. On December 31, 1954, Mexico was declared to be free of foot-and-mouth disease and no further outbreak has occurred since that time. A small standby force is being maintained financed from the appropriation "Salaries and Expenses, Agricultural Research Service, plant and animal disease and pest control" whose principal function is to observe the animal disease situation and be in a position to act promptly should an outbreak occur. The work is conducted in cooperation with the Government of Mexico. Any funds still in the hands of the Mexican-United States Commission for the prevention of Foot-and-Mouth Disease will be used mainly for field and laboratory examinations of suspected cases of foot-and-mouth disease. It is not anticipated that additional funds will be required for this activity in fiscal years 1957 or 1958 unless there is an outbreak of foot-and-mouth disease in the United States or adjacent countries.

The following table shows the status of funds as of September 30, 1956, of the Mexican-United States Commission for the Prevention of Foot-and-Mouth Disease.

Statement of Mexican-United States Commission for
the Prevention of Foot-and-Mouth Disease 1/

As of September 30, 1956

	<u>Pesos</u>	<u>Pesos</u>
Payments to the Commission:		
By the United States	34,995,428 2/	
By Mexico	<u>2,620,920 3/</u>	37,616,348
Income from sale of expendable property to be credited to United States and Mexican Section accounts		<u>77,271</u>
		37,693,619
Less expenses of Commission:		
Cumulative through June 30, 1956	36,672,784	
From June 30, 1956 to September 30, 1956	<u>61,803</u>	<u>36,734,587</u>
Balance available as of September 30, 1956		<u>959,032</u>
The balance as of September 30, 1956 consists of:		
Cash (less Mexican withholding tax and employees' bond deposits, and income and expenses on sale of liquidation property)		264,382
Cash account of United States Section of Joint Commission -- proceeds of sale of canning and rendering plant 750,000 pesos, and income from sale of surplus property 654,164 pesos, available for future pay- ments by the United States to the Joint Commission		461,856 4/
Receivables		1,010
Equipment		<u>231,784</u>
		<u>959,032</u>

1/ Because of variations in the rate of exchange this statement is made in pesos.

2/ Includes 175,443 pesos contributed from proceeds of sales of equipment owned by the Eradication Commission; excludes expendable property carried on the Commission's books at a value of 132,104 pesos.

3/ Includes 20,458 pesos contributed from proceeds of sales of equipment owned by the Eradication Commission. This has also been reduced by 44,886 pesos income from sale of surplus property of the Prevention Commission returned to the Mexican Government.

4/ Represents a 942,308 pesos reduction due to application of funds by the United States Section to Commission expenses.

(d) Animal Disease Laboratory Facilities

Supplemental Appropriation Act, 1957, and base for 1958 a/\$16,250,000
Budget Estimate, 1958 - -
Decrease -16,250,000

a/ In addition, unobligated balance of \$221,079 is available from the appropriation of \$250,000 provided in the Supplemental Appropriation Act, 1956.

PROJECT STATEMENT

Project	1956	1957 (estimated)	1958 (estimated)
Facilities for animal disease research and control	\$28,921	\$973,079	\$14,168,000
Unobligated balance brought forward	- -	-221,079	-15,498,000
Unobligated balance carried forward	221,079	15,498,000	1,330,000
Total appropriation or estimate	250,000	16,250,000	- -

CHANGE IN LANGUAGE

The estimates propose deletion of language for this item as follows:

[For an additional amount for "Animal disease laboratory facilities," for establishment of such facilities, including construction and alteration of buildings and acquisition of necessary land by purchase, donation, or exchange, \$16,250,000, to remain available until expended.]

The estimates propose the deletion of the non-recurring language contained in the Supplemental Appropriation Act, 1957, approved July 27, 1956, which provided \$16,250,000, to be available until expended, for establishment of animal disease laboratory facilities. Plans and specifications for such facilities, to be located at Ames, Iowa, are now being prepared.

STATUS OF PROGRAM

The Supplemental Appropriation Act, 1957, provided \$16,250,000 for construction of animal disease research facilities. This was in addition to the unobligated balance of \$221,079 available from the Supplemental Appropriation Act, 1956, which provided \$250,000 for initial surveys, plans, and specifications.

The site selected for construction of the facilities is at Ames, Iowa, about three miles from Iowa State College. A 318-acre tract of land was donated for the site. The General Services Administration will supervise construction of the facilities and has obtained architectural services for plans and specifications.

It is anticipated that the construction contract for these facilities will be awarded early in fiscal year 1958.

(e) Research Facilities

PROJECT STATEMENT

Project	1956	1957 (estimated)	1958 (estimated)
Facilities for research on foot- and-mouth and other diseases of animals	\$395,737	\$785,617	--
Unobligated balance brought forward	-1,067,454	-785,617	--
Unobligated balance carried forward	785,617	--	--
Recovery of prior-year obligations	-113,900	--	--
Total appropriation or estimate	--	--	--

STATUS OF PROGRAM

The Urgent Deficiency Appropriation Act, 1952, provided \$10,000,000 for the establishment of facilities for research on foot-and-mouth and other animal diseases. This was in addition to the unobligated balance of \$456,823 available from the Second Deficiency Appropriation Act, 1949, which provided \$500,000 for plans and specifications.

It is anticipated that all of the remaining funds for the laboratory and other facilities, located at Plum Island, New York, will be obligated by the end of fiscal year 1957. The main laboratory facilities were dedicated on September 26, 1956. It is estimated that construction in fiscal year 1957 will include a large animal quarantine building, and decontamination facilities and guardhouse in the dock area on Plum Island. It will also include improvement of dock facilities at Orient Point, New York, on Federally-owned land, including pilings to protect shore lines and a jetty to protect the entrance to the harbor there. Holding and dipping facilities for experimental animals will also be constructed on Long Island.

(f) Working Capital Fund, Agricultural Research Center

This working capital fund is a continuing operating fund established by the 1951 Agricultural Appropriation Act in the amount of \$300,000 to pay the operating costs of certain centralized services and facilities at the Agricultural Research Center pending receipt of reimbursements for such costs from the agencies provided with the services. The integrity of the original appropriation is maintained from year to year by means of these reimbursements.

Statements reflecting the assets and liabilities and income and expenses of the working capital fund as of June 30, 1956, as well as estimates for 1957 and 1958, are printed in the Budget schedules and in the Subcommittee Print for the fiscal year 1958.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1956, were actually received or programmed for 1957 or 1958. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	: Obligations, 1956	: Estimated Obligations, 1957	: Estimated Obligations, 1958
Allotments from:			
Watershed Protection, Soil Conservation Service -			
1. Watershed planning and works of improvement	\$84,458:	\$105,000:	\$113,000
2. Surveys and investigations of water resources programs	20,442:	175,000:	181,000
Total, Soil Conservation Service	104,900:	280,000:	294,000
Allocations and Working Funds:			
(Advances from other Agencies)			
Department of Agriculture:			
Agricultural Marketing Service:			
Marketing research and service:			
To develop methods of estimating carcass composition of live meat animals	14,681:	- -	- -
For studies on pre-slaughter treatment of meat animals	8,131:	- -	- -
For study of yield of dairy products from a unit quantity of milk	6,120:	- -	- -
To determine the nutritional effect of drying unripe grains by different procedures on decreases in nutritional value of the nutrients	4,247:	- -	- -
To develop methods and equipment for determining the quality of shell eggs	4,016:	- -	- -
For identification and certification of superior meat-type hogs	19,890:	- -	- -
To make practical tests for determining the baking quality of milk solids	14,280:	- -	- -
For improvement of U. S. Grades of hay to increase nutrition value ...	11,200:	- -	- -
Total, Marketing research and service	82,565:	- -	- -
School lunch program - To provide technical assistance on nutrition problems in the National School Lunch Program	32,177:	- -	- -
Total, Agricultural Marketing Service	114,742:	- -	- -

(Continued on next page)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
<u>Atomic Energy Commission:</u>			
Research on accumulation and movement of fission products in soils and plants ..	79,732:	- -	- -
Intermediary metabolism of proteins and amino acids in avian and mammalian species	39,658:	- -	- -
Total, Atomic Energy Commission	119,390:	- -	- -
<u>International Cooperation Administration -</u>			
For expenses in connection with training, consultation and technical assistance activities	628,115:	759,900:	- -
<u>Department of the Army:</u>			
Chemical, biological and engineering investigations	437,051:	148,526:	- -
For meat inspection and grading services for Department of the Army	650,000:	- -	- -
Study of the dehydration of fruits and vegetables	10,502:	- -	- -
Studies, tests and experimental investigations on rice diseases and herbicides	5,561:	8,939:	- -
Research on defalcation of jungle vegetation and related problems	2,467:	5,533:	- -
Research on cereal rust epidemiology ...	- -	17,000:	- -
Dispenser for and development of an aerosol bomb	- -	9,000:	- -
Total, Department of the Army	1,105,581:	188,998:	- -
<u>Department of the Air Force:</u>			
For experimental investigations, studies, and tests in connection with the development of special scientific equipment	27,544:	3,017:	- -
Research relating to the effect of aircraft noises on swine	64,976:	24:	- -
Total, Department of the Air Force ..	92,520:	3,041:	- -
<u>Department of the Interior:</u>			
Chemical and physical analysis of soil and their relation to irrigation agriculture	1,000:	538:	- -
Research on cotton and other crops	10,020:	- -	- -
Total, Department of the Interior	11,020:	538:	- -
<u>General Services Administration - For</u>			
research and survey activities relating to continuing and expanding abaca production in the Western Hemisphere and the production of seed	54,789:	- -	- -
<u>Department of State - Plant quarantine</u>			
inspection services, Australia and New Zealand	5,250:	5,250:	- -

(Continued on next page)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
<u>Federal Civil Defense Administration -</u>			
Planning and development of programs			
for protection of livestock and crops			
under defense emergency conditions ,..	- -	70,000:	100,000
Total, Allocations and Working Funds	2,131,407:	1,027,727:	100,000
<u>Trust Funds:</u>			
<u>Expenses and refunds, inspection and</u>			
<u>grading of farm products:</u>			
1. Inspection and certification of			
animal foods and inedible agricul-			
tural products in interstate and			
foreign commerce	77,919:	87,000:	92,000
2. Identification service for meat and			
other products	24,586:	27,000:	28,500
3. Contract specification work on meat			
and meat food products	449,331:	236,000:	249,500
<u>Expenses, feed and attendants for animals:</u>			
<u>in quarantine</u>	31,320:	19,338:	19,000
<u>Miscellaneous contributed funds</u>	182,280:	222,712:	215,625
Total, Trust Funds	765,436:	592,050:	604,625
<u>Transfer from Commodity Credit</u>			
<u>Corporation - For accelerated brucellosis:</u>			
eradication program in accordance with			
the Act of August 23, 1954 (Public Law			
690)	16,224,435:	20,000,000:	20,000,000
<u>Obligations under Reimbursements From</u>			
<u>Governmental and Other Sources:</u>			
<u>Salaries and expenses:</u>			
Research	284,676:	665,071:	513,746
Plant and animal disease and pest			
control	537,540:	564,500:	582,500
Meat inspection	6,241,340:	6,000,000:	6,100,000
Miscellaneous services to other			
accounts	515,692:	669,369:	682,768
Total, Salaries and expenses	7,579,248:	7,898,940:	7,879,014
All other	7,806:	- -	- -
Total, obligations under reimburse-			
ments	7,587,054:	7,898,940:	7,879,014
<u>TOTAL, OBLIGATIONS UNDER ALLOTMENTS AND</u>			
<u>OTHER FUNDS</u>	26,813,232:	29,798,717:	28,877,639



PASSENGER MOTOR VEHICLES

The 1958 Budget Estimates propose the purchase of 20 additional passenger motor vehicles and the replacement of 278 such vehicles.

Additional Vehicles

Twenty additional passenger motor vehicles are needed for fiscal year 1958 primarily for use under research increases recommended for fiscal year 1958. They are required for the following programs:

Cotton ginning research at Clemson College, South Carolina for travel from the new laboratory to surrounding plantations and cotton ginning mills 1

Research on efficiency of water management in relation to irrigation (5) and soil and water management in the upper Colorado River Basin (2) for extensive travel to projects and to cooperating farms 7

Development and improvement of equipment for application of chemicals for control of insects, plant diseases, and weeds in growing crops for travel to farms in Ohio and Oregon 2

Development of economic guides and appraisal of farm programs, and research on financial conditions, land ownership, and tax burden on different groups of farmers for use in extensive field travel to collect data from farmers, local and State agencies, lending agencies, etc. 4

Economic studies of irrigation in the Upper Colorado River Basin for travel to obtain basic data from farmers and other sources 1

Seed storage work at Fort Collins, Colorado for travel from the new National Seed Storage Laboratory to points in Colorado and surrounding States for inspection of seed increase plots, and for conferring with Federal and State research workers 1

Plant quarantine inspection work at Newport News, Virginia and at the newly opened port of Wilmington, North Carolina for travel by inspectors to and from docks, airports, and post offices at irregular hours determined by arrival of ships and planes 2

At Plum Island, New York, for research on Diseases of Animals and Poultry, 2 additional 50 passenger-carrying busses are needed for transporting employees from the dock to the laboratory. The busses now available can haul 211 passengers, but capacity for 300 employees is needed. It is estimated that the additional busses would result in a time-saving for work of about 20 minutes twice a day for each employee, or about 4 man-years of time for each bus. Busses needed 2

Total 20

Present passenger vehicles are needed for current research, control and regulatory programs. To require scientific personnel to use their own cars which are needed for family use, or to drive trucks over long distances would create difficult problems.

Replacements

All passenger vehicles to be replaced will either have mileage of more than 60,000, or be 6 or more years old, and nearly all will meet both these standards. Exceptions to meeting both standards would be due to unusually heavy usage and excessively high operating and maintenance costs. A detailed justification of the proposed replacements follows:

Research

Replacements would be made of 88 of the 422 passenger motor vehicles operated at field stations engaged in research. These vehicles are used in travel where no public transportation is available, such as to farms, ranches, cooperating experiment stations, etc., and in travel to remote sections of large stations. They are essential for collecting experimental data and specimens and for observing research generally.

Plant and Animal Disease and Pest Control

Replacement would be made of 182 of the 790 passenger motor vehicles. About 75% are operated in daily farm-to-farm travel in the control and eradication of tuberculosis, brucellosis, sheep scabies, cattle tick fever and hog cholera. About 14% are operated in travel on plant disease and pest control work and around 11% on animal and plant quarantine work. The rough and rugged roads over which much of daily farm travel is performed, in all kinds of weather, is very hard on cars. In order to keep them in safe and dependable operating conditions, maintenance costs are frequently high; however, the testing and inspection cannot be carried on without them. In most cases, employees who own cars are reluctant to use them for even limited periods because of the hard usage to which they are subjected in this work. The replacements recommended will make it possible for those cars to be replaced which are reaching inoperable condition.

Meat Inspection

Replacement would be made of 8 of the 32 passenger motor vehicles used on meat inspection work. They are used by inspectors in charge, supervisors, and inspectors in visiting meat packing plants under Federal inspection located in metropolitan and rural areas throughout the country. For the most part plants are located where use of public transportation would cause undue delays. The use of automobiles enables inspectors to cover inspection needs more efficiently and saves personnel. For example, where one man with a car can cover two establishments 40 miles apart, without a car it would be necessary to have a man in each plant.

Age and Mileage Data

The widely diversified research and regulatory activities and the varying nature of the areas in which cars are operated make it impractical to establish standards for car utilization on a mileage basis or on the basis of number of employees. Cars are a necessity for carrying workers expeditiously to the scattered sites of testing, inspection and observation work. Under meat inspection, one car is required for each inspector required to service two or more inspected meat packing establishments.

Age and mileage data for passenger-carrying vehicles on hand as of June 30, 1956:

<u>Age-Year</u> <u>Model</u>	<u>Age Data</u>		<u>Lifetime</u> <u>Mileage</u> (thousands)	<u>Mileage Data</u>	
	<u>Number of</u> <u>Vehicles</u>	<u>Percent</u> <u>of Total</u>		<u>Number of</u> <u>Vehicles</u>	<u>Percent</u> <u>of Total</u>
1949 or older	192	15	Under 20	433	34
1950	63	5	20-40	287	22
1951	98	8	40-60	251	20
1952	96	8	60-80	159	12
1953	229	18	80-100	95	8
1954	39	3	Over 100	51	4
1955	257	20			
1956	302	23			
Totals	<u>1,276</u> a/	<u>100</u>		<u>1,276</u> a/	<u>100</u>

a/ Excludes 15 vehicles used in foreign countries.

AIRCRAFT

Authority is requested to replace one airplane which is used for developing technical procedures for aerial contract specifications and control operations on plant pest control activities. There is need to replace an old Stearman airplane, built in 1943 and acquired from war surplus, for a new plane designed especially for agricultural use which would embrace the latest safety devices and be equipped to apply dust or granular materials and sprays intermittently or simultaneously. The new plane would be much more efficient for pest control work and would also be more economical to operate.

EXTENSION SERVICE

Purpose Statement

The function of the nationwide system of cooperative Federal-State extension work in agriculture and home economics, authorized and conducted under the Smith-Lever Act as amended, is to take research results, technological advancements, and situation and program facts of the Department of Agriculture and the State Agricultural Colleges and Experiment Stations, and incorporate them into a national educational program which will provide the means by which people can effectively solve their farm and home problems.

The purpose of the Cooperative Extension Service is to assist the people of the United States by providing them with useful and practical information on subjects relating to agriculture, home economics and marketing, and to encourage the application of such information through the giving of instructions and practical demonstrations and other appropriate means.

Among the major end objectives of this work are to:

1. Improve farm efficiency and farm incomes.
2. Develop, improve and conserve agricultural resources.
3. Adjust agricultural production more in line with effective market demands.
4. Expand markets for agricultural products.
5. Reduce marketing costs.
6. Improve home and community living conditions.
7. Develop an informed and competent rural youth.
8. Work with local institutions and groups to assist them in more nearly balancing available labor with industry and agricultural requirements.

To accomplish these and other objectives the activities of the entire cooperative extension organization are directed largely toward:

- a. Insuring the economic stability of farm families by increasing their net income through the application of science and technology resulting from research in agriculture and home economics and related subjects. This is accomplished through teaching the application of science and technology in reducing costs, increasing efficiency, improving quality and reducing losses in farm production, improving home operations, developing and conserving soil, water and human resources, and improving marketing methods.
- b. Increasing the efficiency of market operations by encouraging the application of research by handlers, processors, wholesalers, retailers and those engaged in transportation and storage of agricultural products. This reduces wastes, lowers costs of marketing, expands market outlets and improves the quality of products for consumers.

- c. Improving family living through promoting the adoption of better nutrition and health measures, improving housing and farm home facilities, wider use of labor-saving equipment and methods, the adoption of farm and home safety measures, and the development and use of community health and recreational facilities.
- d. Assisting youth to understand the application of science to farming, homemaking and marketing through 4-H Club work and training youth to accept their full responsibility as citizens.
- e. Assisting institutions and groups in organizing available resources and encouraging the development of additional resources in disadvantaged areas under the Rural Development Program, in order to improve the level of living of the people of those areas.

The cooperative extension service is financed from Federal, State, county and local sources. These funds are used within the States for the employment of county agents, home demonstration agents, 4-H Club agents, State specialists and others who conduct among rural people the joint educational programs adapted to local problems and conditions.

The Federal Extension Service, the educational arm of the United States Department of Agriculture provides leadership, counsel, and assistance to the Extension Services in the 51 States and Territories including county extension offices in more than 3,000 counties. The Federal Extension Service, as a partner in the cooperative extension effort, is responsible for administering the provisions of Federal laws authorizing extension work; helping to maintain a modern, efficient and dynamic extension system in each State and Territory; coordinating the work among the States in cooperation with committees of State Directors and through other means; pioneering in new educational methods; evaluating the results of work performed; maintaining liaison with research, service, adjustment, and regulatory agencies of the Department; coordinating all educational work of the Department; and cooperating with other departments of government and private organizations in matters relating to extension education.

On November 30, 1956, there were approximately 14,000 State and county extension workers attached to the State organizations, and 258 Federal employees, 247 of whom were in Washington.

	Appropriated, 1957	Budget Estimates, 1958
Appropriated funds:		
Payments to States, Hawaii, Alaska, and Puerto Rico	\$49,865,000	\$54,365,000
Retirement costs for extension agents	- -	5,260,000
Penalty mail (for cooperative extension agents and State Extension Directors)	1,650,000	2,164,000
Federal Extension Service	2,000,000	2,341,000
Total, appropriated funds	<u>53,515,000</u>	<u>64,130,000</u>

REVISION OF APPROPRIATION STRUCTURE

The 1958 estimates reflect a revision of the appropriation structure for the Extension Service to consolidate within a single mainhead appropriation account the four separate projects (one of which is new, covering retirement costs of extension agents) for the agricultural extension program. These adjustments will simplify and clarify budgetary presentation. A comparison of the revised structure with that reflected in the 1957 Budget, is as follows:

<u>Appropriation and Project Structure in the 1957 Budget</u>	<u>Appropriation and Project Structure Proposed in the 1958 Department Estimates</u>
Payments to States, Hawaii, Alaska, and Puerto Rico:	Cooperative Extension Work, Pay- ments and Expenses:
1. Payments for cooperative agricultural extension work under Smith-Lever Act	1. Payments to States, Hawaii Alaska, and Puerto Rico:
2. Payments and contracts under the Agricultural Marketing Act	(a) Payments for coopera- tive agricultural extension work under Smith-Lever Act
Salaries and Expenses, Federal Extension Service:	(b) Payments and contracts under the Agricultural Marketing Act
1. Coordination, administration, and program leadership of cooperative extension work	2. Retirement costs for exten- sion agents
2. Penalty mail for cooperative extension agents	3. Penalty mail (for coopera- tive extension agents and State Extension Directors)
	4. Federal Extension Service

Cooperative Extension Work, Payments and Expenses

	Payments to States, Hawaii, Alaska, and Puerto Rico	Retirement Costs for Extension Agents	Penalty Mail	Federal Extension Service	Total
Appropriation Act, 1957 and base for 1958	\$49,865,000	--	\$1,650,000	\$2,000,000	\$53,515,000
Budget Estimate, 1958	<u>54,365,000</u>	<u>\$5,260,000</u>	<u>2,164,000</u>	<u>2,341,000</u>	<u>64,130,000</u>
Increase	<u>+4,500,000</u>	<u>+5,260,000</u>	<u>+ 514,000</u>	<u>+ 341,000</u>	<u>+10,615,000</u>

SUMMARY OF INCREASES, 1958

Payments to States, Hawaii, Alaska, and Puerto Rico:

To further strengthen State and county extension work	+ 3,050,000
To provide for more intensive educational work in low income areas under the Rural Development Program	+ 1,300,000
To expand the marketing educational program	+ 150,000
Total increases for Payments to States, Hawaii, Alaska and Puerto Rico	<u>4,500,000</u>

Retirement Costs for Extension Agents:

To provide for the employer's contribution to the retirement fund for cooperative extension agents pursuant to Public Law 854	+ <u>5,260,000</u>
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Penalty Mail:

To provide for penalty mail costs of State Extension Directors pursuant to Public Law 705	+ <u>514,000</u>
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Federal Extension Service:

To strengthen the administration of the Extension Service programs	+ 244,460
For contributions to the retirement fund pursuant to Public Law 854	+ 96,540
Total increases for Federal Extension Service	<u>341,000</u>

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
1. Payments to States, Hawaii, Alaska, and Puerto Rico:					
(a) Payments for cooper- tive agri- tural ex- tension work under Smith-Lever Act	\$42,951,571	\$48,370,000	- -	+\$4,350,000(1)	\$52,720,000
(b) Payments and con- tracts under the Agri- cultural Marketing Act	1,258,140	1,495,000	- -	+ 150,000(2)	1,645,000
2. Retirement costs for ex- tension agents	- -	- -	+\$4,880,000(3)	+ 380,000(3)	5,260,000
3. Penalty mail (for extension agents and State Extension Directors) ...	1,650,000	1,650,000	- -	+ 514,000(4)	2,164,000
4. Federal Exten- sion Service .	1,902,943	2,000,000	+ 96,540(6)	+ 244,460(5)	2,341,000
Unobligated balance	357,346	- -	- -	- -	- -
Total retirement costs (P.L. 854)	- -	- -	[+4,976,540]	[+389,460]	[5,366,000]
Total available or estimate ..	48,120,000	53,515,000	+4,976,540	+5,638,460	64,130,000
Transferred to "Marketing re- search and service, Agri- cultural Mar- keting Service"	+ 925,000	- -			
Total appropria- tion or esti- mate	49,045,000	53,515,000			

INCREASES

The increase of \$10,615,000 under this appropriation for 1958 consists of the following:

(1) An increase of \$4,350,000 for "Payments for cooperative agricultural extension work under Smith-Lever Act of May 8, 1914, as amended by the act of June 26, 1953, and the Act of August 11, 1955, (69 Stat. 683-4)", composed of:

(a) Increase of \$3,050,000 to further strengthen State and county extension work.

Problem and Need for Increase: The family farm and the problems of the family on the farm provide the basis for most extension work. These farm families realize that through advancing technology, new facts are becoming available at an accelerating rate. This makes their problems of keeping abreast of new developments and making application of them to their operations more and more difficult. As a result of this ever changing situation, the demand increases for more intimate, and to some degree more individual, on-the-farm educational approach in extension teaching.

This demand for extension assistance includes help on ways to bring production more nearly in line with effective demand. It means help to bring expenditures into line with income, to reduce risks, to obtain appropriate and adequate credit, -- to bring the farm operation up to modern standards of good management and to the fullest use of modern technology.

Each farm family needs to understand the assistance available to them through various programs of the Department of Agriculture. The application of these programs to individual farms and to the families operating them differ as the farms and families differ. How to best weave these benefits into the fabric of their management results from participation in a sound educational program. Farmers are earnestly seeking help in ways of utilizing programs such as the soil bank, credit, crop insurance and conservation assistance into their operations in a way that will improve their economic position, conserve their natural resources, provide more orderly marketing, reduce surpluses and help bring production into closer balance with market needs.

The educational method of working intensively with farm families on a unit basis is proving to be a most effective means of providing effective assistance. This method involves the entire family, their farming and their home-making operation as a unit. Organization of the farm business, production techniques, home management, human nutrition, family and community living, including work with boys and girls through 4-H Clubs are incorporated into this more intensive method of doing extension teaching.

This method of doing extension work has proven to be most productive in terms of progress made by the families directly involved. Extension agents are not able to expand their work with individual families fast

enough to meet the demands and yet carry on the many other educational activities expected of them. In many States the number of families seeking to participate in farm and home development, as this method is commonly called, is expanding rapidly. The greatest demand comes from young families getting started. They are finding the problems of financing and managing a modern farming venture to be great indeed. In more than 2,300 counties, agents are working with individual farm families through this organized approach. Most counties are under-staffed, and are unable to provide the organized assistance requested. In many counties from 2,000 to 3,000 farm families are still being served by one or two agricultural agents and one home agent. In 500 counties there are no home agents. In these situations the services of the agents are spread so thinly that they are unable, while rendering some assistance to all families, to provide the more intimate education necessary to help many families to come to grips with their problems, on their own farms, ranches and homes.

Extension Work Based on the Recognition of Potential Growth and Development: Currently in about one-half of the counties of the nation an effort is being initiated and developed whereby local groups are carefully evaluating all their resources, both human and natural. They are inventorying such items as the labor supply, land, water and climatic resources, crop yields, livestock efficiency, credit, markets, transportation, communication, assistance through their own organizations, industrial development and government programs.

They are following this with a carefully developed analysis of the potential insofar as current information will permit them to estimate future developments. They are trying to judge where they could be as a county or community, if all that modern service and technology has to offer could be put into use.

The third step in this deliberation is to carefully evolve an educational effort designed to bring these potentials into reality. Out of these many sided deliberations are emerging the extension programs of the years ahead.

4-H Club Work Comes into Relief as Extension Programs are Projected: 4-H Club work is an integral part of the extension effort. Its influence directly affects over 2 million boys and girls. This represents approximately 17.8 percent of all farm and rural non-farm boys and girls. Though the total number of farms is decreasing, it is estimated by 1960 the number of boys and girls of 4-H age on farms will have increased 12.7 percent above the 1950 census, and on rural non-farms 40.4 percent.

While the record of progress is a most encouraging one, the challenge to reach more young people remains. Training competent, healthy, clear thinking rural youth is vital to the future progress of American life.

About one-half of the farm-raised boys and girls emigrate to industrial centers taking with them their wholesome rural culture and the concepts acquired in those early days in farm homes. Here they learned through 4-H the importance of individual effort, the responsibility of ownership, the pride of accomplishment, the humility of the winner, the satisfaction of a job well done and the basic principles of democracy as they learned to live by a set of standards and rules they as a club devised. As a result, through popular demand, 4-H Club work is moving into suburban and to a limited degree into urban communities.

Impact of Research Findings on the Home and Family Living: The rapid advance in the findings of technology has provided many new horizons in the home and family living. The drudgery of homemaking has been greatly reduced. Farm families are faced with the matter of how to take advantage of new and sometimes costly items of equipment. They are concerned with effective ways of productively using the time made available by modern home equipment. Homemakers are seeking assistance in fields of nutrition, management of the family income, family health, housing, labor-saving equipment, family relations, and community activities. Through 66,459 home demonstration groups of 1,442,966 homemakers local leaders are trained who voluntarily carry on much of the teaching of home economics in their groups. 4,690,880 additional homemakers are cooperating in programs outside of organized groups or with groups organized by efforts other than extension.

Marketing Can Become More Efficient: The ever increasing results of marketing research provides a basis for more efficient marketing and expanded utilization of agricultural products. This has created a demand for increased marketing educational work designed to assist in speeding the application of these research results. Marketing firms are seeking assistance in the application of these research results to the problems peculiar to their operation. Processors are seeking more help from extension in using the results of utilization research.

By keeping consumers well informed through an educational program much is being accomplished in preventing serious drops in prices during peak marketings. This is helping to stabilize prices at the time farmers are selling their products.

Increased efficiency in market operations will not only provide a better quality product for consumers but will also return to producers a higher percentage of the consumer's dollar.

Cooperation - Federal, State, and Local: Federal, State and local governments finance extension work. It is a cooperative endeavor and the total cost is shared, 41.9% by Federal government, 35.2% by State and 22.9% by county and local governments. There was an increase of \$4,600,000 from State and local sources in 1957. Federal funds, under Section 3 of the Smith-Lever Act, except those for special needs, are allocated to the States according to a legislatively prescribed formula. The cooperative feature of the Department

of Agriculture and the land-grant institutions is based upon the development of mutually agreed upon programs, and projects as reflected in annual budgets, and annual plans of work. The hearty support by States and counties in carrying out their part of the partnership is evidence that the cooperative program of the Extension Service is meeting with strong local support and approval.

Table I attached indicates the sources of funds allotted for cooperative extension work in the States, Hawaii, Alaska and Puerto Rico for 1957.

Table II shows estimated allotments to States and Territories on the basis of rural and farm population for the proposed increase for 1958.

Plan of Work: The proposed increase will permit expansion of the farm unit approach as a method of extension teaching. This expansion will speed up the application of research results and help farm families incorporate them into a well rounded farm and home management program tailored specifically to the conditions existing on individual farms, and homes.

Additional personnel will permit reaching a larger number of boys and girls through 4-H club work and will assist in strengthening and improving the methods used in working with these young people.

The increase will provide not only additional personnel in the counties but in some cases permit States to provide more subject matter assistance and more in-service training - thus insuring well trained competent personnel to carry out the program utilizing fully all new means of communication while older time proven methods are improved and personnel trained to be more proficient in their use.

(b) Increase of \$1,300,000 for more intensive extension educational work in low-income areas.

The Problem and Need for Increase: There are over 1,500,000 farm families in this country with cash incomes of less than \$1,000. Most of these families are living on small farms. Many of these small farms are of low productive capacity, either because of the nature of the soil and topography or because of inappropriate land use in the past. Operators of these units are often underemployed, usually having less than average formal education, and are less aggressive in seeking help to better their circumstances. Characteristically, also, these farms are primarily located in geographical areas where other sources of gainful employment are limited, public facilities, such as health and education are less well developed, and agricultural practices and levels of living are much below the average for the rest of the country. Specifically, some of the immediate problems are:

- (1) Lack of income
- (2) Lack of resources
- (3) Lack of non-farm jobs
- (4) Lack of knowledge
- (5) Lack of adequate motivation

These and related factors prevent these people from attaining a reasonable potential in their own and the national welfare. Special efforts are justified, therefore, to improve their opportunities and capabilities in the national interest as well as in the interest of the individual families in these circumstances.

To help meet the problem of these low-income farmers, the Congress among other actions amended the Smith-Lever Act by adding Section 8 which gives the Extension Service four major responsibilities, as follows:

- "(1) Intensive on-the-farm educational assistance to the farm families in appraising and resolving their problems;
- "(2) Assistance and counseling to local groups in appraising resources for capability of improvement in agriculture or introduction of industry designed to supplement farm income;
- "(3) Cooperation with other agencies and groups in furnishing information as to employment opportunities, particularly to farm families having underemployed workers; and
- "(4) in cases where the farm family finds it advisable to seek a new farming venture, the providing of information, advice, and counsel in connection with making such change."

Of the more than 1,000 counties characterized by abnormally low average farm family incomes intensified work under the Rural Development Program is now underway in only about 5% of these counties. It is essential that this effort move forward by initiating work in additional counties and by strengthening the work in counties now included. Experience under this Program has shown that, in many counties, the local residents are determined that their county can make a come-back, but competent leadership as well as special methods and techniques are necessary if optimum progress is to be made. These families need help in determining which solutions should be applied to their individual family problems as well as how to apply them.

Plan of Work: A concentrated effort designed to meet the needs of these families is now going forward as a part of the on-going extension program. During the past year, agricultural college and extension service representatives in many States have accomplished within the present framework of Extension the organization essential to effective work on rural development. Because successful rural development is based on a total effort at economic improvement, non-agricultural organizations and agencies, as well as those directly concerned with agriculture are actively participating in the program. It is an integrated undertaking that involves research, education, credit, technical assistance, business, industry, employment services, and vocational training. It is based on the philosophy that people will make wise decisions if they are properly informed about their

alternative opportunities and if their abilities are developed so that they can take advantage of the opportunities available or made available to them.

In counties where additional extension personnel will be made available with these funds, farm families will be assisted in thinking through and working out plans in line with their own resources. In addition extension personnel, working with local committees and agency personnel, will help to:

1. Stimulate coordinated action on the problems contributing to low incomes in rural areas.
2. Meet the needs of low-income farmers and part-time farmers by expanding and adapting extension work to this group.
3. Encourage farm, business, and other leadership to take local responsibility and to unite in efforts for further development of low-income counties and their human resources.
4. Obtain appropriate credit for low-income and part-time farmers where justified.
5. Increase technical assistance, provide more effective employment counseling, and the like.
6. Encourage the expansion of opportunities for vocational guidance and other training for young people in low-income rural areas.
7. Encourage the expansion and improvement of other public facilities and services.
8. Encourage the expansion of industry in rural low-income areas.
9. Develop research and investigations essential to finding the best solutions to problems in such areas and the best ways to conduct such coordinated efforts for improvement.

Funds will be made available to the States upon the approval of budgets submitted by the States concerned, supported by an appropriate plan of work in the counties selected.

(2) An increase of \$150,000 to expand marketing educational work on a matching fund basis:

Problem and Need for Increase:

Increased Marketing Efficiency is Essential: Efficiency in marketing is achieved as retailers, wholesalers, processors, farmers and others better satisfy consumer demands and as they make better adjustments in marketing practices in response to supply and demand. Extension programs assist farmers and marketing firms to improve marketing

practices by the application of the rapidly increasing results of research. Requests from marketing agencies for more of this work are increasing and Department advisory committees are continuing to recommend expansion of extension programs in marketing.

Reducing Costs in Marketing Requires Additional Attention: Recent studies indicate opportunities to reduce costs of marketing. Increased emphasis is needed in helping marketing agencies apply research findings in reducing costs of labor, equipment, facilities, and product deterioration in handling, packing, storing and other operations. Frequently there is a considerable lag in the application of these results. Increased extension education results in marketing firms applying research results more rapidly.

Expanding Markets Through Utilization Programs: Utilization research is constantly producing new developments to expand markets for agricultural products, improve product quality, better satisfy consumers and reduce costs of processing. Also, many processors of farm products have immediate use for research now available in solving their problems. While extension has increased its work in this area, the success of this work and needs expressed by the industry indicate that extension should expand its educational work on the utilization of agricultural products.

Plan of Work: The additional funds will be used to increase educational work on marketing efficiency in areas of greatest need and to reduce marketing costs. More work will be conducted with processors of agricultural products. More district or area marketing agents will provide greater on-the-spot assistance. This proposed increase in work is distinguished from that under the Smith-Lever Act by the need to provide funds for specific projects in a particular area or State which cannot be financed from the more general distribution of funds under the formula set forth in the Smith-Lever Act. The proposed increase of \$150,000 for fiscal year 1958 would permit State Extension services to further expand marketing work on a matching fund basis with trade groups and consumers and provide for limited expansion of regional marketing information programs.

(3) An increase of \$5,260,000 for Federal contributions to the retirement fund for cooperative extension agents pursuant to Public Law 854.

Cooperative extension agents are joint employees of the U. S. Department of Agriculture and the cooperating Land-Grant institutions. They hold appointments under Civil Service Commission regulation A-6, 111 (a) (1). Such appointments place them under the provisions of the U. S. Civil Service Retirement Act immediately upon appointment. The employer's contribution to the retirement fund on behalf of these agents has heretofore been provided within the Federal appropriation to the Civil Service Commission for payment to the fund.

Budgets submitted by State and Territorial Extension Services for fiscal year 1957 were analyzed in order to determine the base amount needed prior to consideration of increases in fiscal year 1958. The amount needed to cover Public Law 854 costs applicable to the base for 1958

is \$4,880,000. In addition, \$380,000 is required for retirement fund contributions arising from increases requested in 1958 for payments to States, making in all a total of \$5,260,000 for this purpose.

Since payments to the States are distributed by formula as prescribed by law for program purposes and the amounts so determined are not related to the needs within the individual States for retirement contributions, there is no practicable or equitable way in which these funds could be made available for retirement fund costs under the formula and it is therefore necessary to request a separate appropriation for the amount required.

(4) An increase of \$514,000 representing cost of penalty mail for State Extension Directors for fiscal year 1958.

Free mailing privileges were granted to State Extension Directors by the Post Office Department under Acts of May 8, and June 30, 1914, permitting them to mail official matter without postage at the Post Office where the State Extension Service is located. The Congress passed the Act of July 14, 1956 (Public Law 705) which requires reimbursement to the Post Office Department for the cost of mailings of State Extension Directors out of appropriations made for such purpose.

Estimates of penalty mail obligations for State Extension Directors for fiscal year 1958 are based on records of procurement by State Extension Directors and applying to this the unit cost figure which was determined on the basis of a scientific sample of the use of Director's free mailing privilege in five States. This analysis included usage in first, second, third, and fourth class, weight, rate per piece, and allowance for non-use due to spoilage, obsolescence, etc. Specifically, estimated needs for fiscal year 1958, to comply with provisions of Public Law 705, are:

8,500,000 pieces, at an average rate of 6.046¢ per piece ... \$514,000

It is anticipated that a supplemental appropriation in the amount of \$514,000 will be requested in 1957 for State Directors' mailings.

(5) An increase of \$244,460 to strengthen the Federal staff to facilitate carrying out the increased responsibilities resulting from the expanded Extension program in the States and Territories.

The Problem and Need for Increase: The Department of Agriculture under the Smith-Lever law is charged with the responsibility of maintaining, with the Land-Grant Colleges and Universities, a cooperative program of out-of-school education in the fields of agriculture and home economics. This program encompasses work not only with adults but with youth through 4-H Club work. It is implemented through a Memorandum of Understanding between the Department and the Colleges.

The functions of the Federal Extension Service fall into two general areas:

The first is that of maintaining a close intimate working relationship with the State Extension Services which permits giving leadership and counsel to them in the development of educational programs. These programs are built upon plans developed through committees of farmers and homemakers working with extension personnel. The subject matter used in these programs must include the latest in technology and economics. These programs must be tailored to help farm families through the process of education to reduce their costs, to practice sound management, to conserve natural resources, to improve marketing procedures and to develop a wholesome family and community life.

In meeting this responsibility the staff of the Federal Extension Service must be adequately manned to maintain a close contact with the research agencies of the Department of Agriculture, with other Departments of Government, with industrial laboratories and with organizations concerned with agriculture and its problems.

Inseparably associated with this effort is the necessity of assisting States to develop educational work designed to help farmers fully understand and utilize programs of the Department. For example, the resources of the Federal Extension Service have been mobilized during the recent months of this year to work with the Commodity Stabilization Service and help State and county extension workers explain the provisions of the Soil Bank as they apply to the management of individual farms and ranches.

While each State extension program is tailored to the particular needs of that State, the overall emphasis depends for its general direction on the coordinating influence of the Federal Extension Service. This is not a dictatorial process nor one of delegation but the more difficult one of developing mutual understanding through consultation. During the last year emphasis of the Land-Grant College Association's Committee on Organization and Policy on which the Federal Extension Service is represented has been directed toward strengthening the processes of program development by local people. This committee looks to the Federal Extension Service to provide the day-to-day guidance, assistance and encouragement necessary to get the job done.

For several years this Committee as a result of its deliberations with farm leadership has placed great emphasis on the expansion of extension work in the field of marketing. The implementation of this work becomes the responsibility of the Federal Extension Service. Many marketing operations cut across State lines. The States are requesting the Federal Extension Service to accept more responsibility for inter-state marketing work.

The Rural Development Program has brought added responsibilities to the Federal Extension Service in working with the States in both the administration and program fields. This extra work is being undertaken by staff members already carrying a heavy load.

Extension workers hold appointments as agents without compensation. This necessitates the maintenance of personnel records for almost 14,000 extension workers.

It is to make possible the fulfilling of these responsibilities in relation to the Land-Grant Colleges that a modest increase in technical personnel and in clerical assistance is needed by the Federal Extension Service.

Plan of Work: To enable the Federal Extension Service to improve the administration and coordination of cooperative extension work, the following positions are urgently needed:

An assistant director for the development of 4-H and Young Men and Women's Programs is urgently needed to meet the demands of the States for more program direction in extension work with young people. The numbers of rural youth are growing and the demands of the program constantly increasing.

One home economic assistant is needed to furnish leadership and training assistance to State home demonstration staffs in improving communications in this field.

Four specialists are needed to strengthen the marketing programs in interstate markets where the States because of out-of-state work are limited in what they can do. This work, however, will be done in close cooperation with the States. It will be directed toward solving the problems of marketing perishable agricultural commodities. These efforts will be directed to reduction of handling costs, to the prevention of deterioration and to the application of a large volume of research which is becoming available in such fields as humidity and temperature control in the handling and distribution of perishables, in improving work methods to increase effectiveness, in getting new methods of conditioning and ripening into use.

A specialist in the field of fiscal, personnel and general management to assist the States to train personnel in these fields and to help them develop more adequate internal audit, is urgently needed.

Two research assistants are needed to meet the requests of States for assistance in conducting studies of the current effectiveness of extension programs and procedures and to train extension staff in the development and use of new effective teaching methods.

In addition to the need for technical and clerical assistance, several other factors have created a serious need for increased funds. Appropriations for the Federal Extension Service for 1956 and the estimates for 1957 did not provide increases for the Federal office. Only a portion of the cost of pay increases authorized by Public Law 94, Act of June 28, 1955 was provided. Administrative costs, including travel, per diem, supplies and equipment have also been rising. All these factors make it necessary to request additional funds for the operations of the Federal Extension Service.

(6) An increase of \$96,540 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language for the Extension Service to reflect the recommended revision of the appropriation structure to consolidate within a single mainhead appropriation account, "Cooperative Agricultural Extension Work, Payments and Expenses", four separate appropriations for the agricultural extension program. The proposed changes are as follows (new language underscored; deleted matter enclosed in brackets):

- 1 Payments to States, Hawaii, Alaska, and Puerto Rico: For payments for cooperative agricultural extension work under the Smith-Lever Act, as amended by the Act of June 26, 1953 (7 U.S.C. 341-348), and the Act of August 11, 1955 (69 Stat. 683-4), [~~\$48,370,000~~] \$52,720,000; and payments and contracts for such work under section 204 (b)-205 of the Agricultural Marketing Act of 1946 (7 U.S.C. 1623-1624), [~~\$1,495,000~~] \$1,645,000; in all, [~~\$49,865,000~~] \$54,365,000: Provided, That funds hereby appropriated pursuant to section 3 (c) of the Act of June 26, 1953, shall not be paid to any State, Hawaii, Alaska, or Puerto Rico prior to availability of an equal sum from non-Federal sources for expenditure during the current fiscal year.
- 2 Retirement costs for extension agents: For costs of employer's share of Federal retirement for cooperative extension employees, \$5,260,000.
- 3 Penalty mail: For costs of penalty mail for cooperative extension agents, [~~\$1,650,000~~] and State extension directors, \$2,164,000.
- 4 [Administration and coordination] Federal Extension Service: For administration of the Smith-Lever Act, as amended by the Act of June 26, 1953 (7 U.S.C. 341-348), and the Act of August 11, 1955 (69 Stat. 683-4), and extension aspects of the Agricultural Marketing Act of 1946 (7 U.S.C. 1621-1627), and to coordinate and provide program leadership for the extension work of the Department and the several States, Territories, and insular possessions, [~~\$2,000,000~~] \$2,341,000.

The first change in language involves establishment of the item for "Payments to States, Hawaii, Alaska, and Puerto Rico" as a subappropriation item within the mainhead account, in lieu of a separate appropriation as in the past.

The second change involves establishment of a new item for "Retirement costs for extension agents" to provide the necessary appropriations to pay the employer's share of Federal contributions to the retirement fund for cooperative extension employees, pursuant to Public Law 854.

The third change proposes to add the words "and State extension directors" to the item for "Penalty Mail". Public Law 705, 84th Congress, provides that the Post Office Department shall be reimbursed from appropriations

made specifically therefor to cover the cost of penalty mail incurred by State extension directors. The inclusion of these words and the appropriation of the funds requested would permit reimbursement to the Post Office Department in accordance with the law.

The fourth change proposes to eliminate the title "Administration and coordination" and insert in lieu thereof "Federal Extension Service" with respect to funds for Federal administration of the cooperative agricultural extension program.

PAYMENTS TO STATES AND TERRITORIES

Federal funds available for fiscal year 1957 for cooperative agricultural extension work within the States, Hawaii, Alaska, and Puerto Rico under the Smith-Lever Act, as amended (\$48,370,000), and for carrying out the provisions of the Agricultural Marketing Act (\$1,355,000 for payments to States and \$140,000 for contracts) total \$49,865,000.

Payments to the States and Territories are made directly to a designated officer in each State and Territory and the funds are disbursed by them in accordance with budgets and programs of work submitted by the State directors of extension and approved by the Administrator of the Federal Extension Service on behalf of the Secretary of Agriculture. As reflected on Table I, at present less than 42 percent of the cost of extension work is being financed from Federal sources and more than 58 percent from State and local sources. The funds are used by the States for the employment of extension workers to carry on cooperative agricultural extension work. Paid extension workers are being assisted by a network of voluntary neighborhood leaders who cooperate in carrying out extension programs.

The use of these funds is indicated in greater detail in the following tables. Table I indicates the sources of funds allotted for cooperative extension work in the States, Alaska, Hawaii, and Puerto Rico for 1957, including allotments under the Agricultural Marketing Act. Table II reflects the allocation of Federal funds to States on the basis of rural and farm population. Table III shows estimated direct payments to and contracts with States and Territories for 1958, indicating those which require offset by States, county or local funds, those where such offset is not required, and the basis of allotment. Table IV indicates the various classes of field agents employed with extension funds.

U. S. DEPARTMENT OF AGRICULTURE
FEDERAL EXTENSION SERVICE

Table I

SOURCES OF FUNDS ALLOTTED FOR COOPERATIVE EXTENSION WORK IN STATES, ALASKA, HAWAII, AND PUERTO RICO
FOR THE FISCAL YEAR ENDING JUNE 30, 1957

STATES	GRAND TOTAL	TOTAL FEDERAL FUNDS	TOTAL WITHIN THE STATES	FUNDS FROM FEDERAL SOURCES		FUND FROM STATE AND COLLEGE	FUND FROM COUNTY	FUND FROM THE STATES	NON-PUBLIC SOURCES
				SMITH-LEVER ACT AS AMENDED	AGRICULTURAL MARKETING ACT* (TITLE II)				
Alabama	\$ 3,430,162.15	\$ 1,773,184.61	\$ 1,656,977.54	\$ 1,746,869.61	\$ 26,315.00	\$ 983,177.54	\$ 673,800.00	\$ -	-
Arizona	607,854.50	253,081.39	354,773.11	253,081.39	-	307,013.11	47,760.00	-	-
Arkansas	2,414,334.83	1,455,272.08	959,062.75	1,455,272.08	-	528,648.75	369,322.00	-	-
California	5,486,894.36	1,260,868.01	4,226,026.35	1,218,384.01	42,484.00	2,979,107.35	1,246,919.00	61,092.00	-
Colorado	1,353,637.08	507,894.08	845,743.00	501,384.08	6,510.00	421,000.00	424,035.00	-	-
Connecticut	809,700.49	255,032.49	554,668.00	248,339.49	6,693.00	310,333.00	230,085.00	708.00	-
Delaware	291,946.29	145,046.29	146,900.00	130,046.29	15,000.00	133,050.00	1,550.00	-	-
Florida	1,994,767.94	571,726.94	1,423,041.00	561,826.94	9,900.00	782,352.00	640,689.00	14,250.00	-
Georgia	3,548,269.35	1,921,220.35	1,627,049.00	1,876,370.35	44,850.00	988,208.00	638,841.00	12,300.00	-
Idaho	1,040,201.00	376,497.92	663,703.08	371,997.92	4,500.00	370,843.08	272,860.00	-	-
Illinois	3,792,878.86	1,490,392.86	2,302,486.00	1,466,192.86	24,200.00	1,018,500.00	-	20,000.00	-
Indiana	3,181,273.86	1,265,145.25	1,916,128.61	1,224,145.25	41,000.00	983,070.00	918,058.61	1,283,986.00	-
Iowa	3,805,100.87	1,361,680.87	2,443,420.00	1,316,780.87	44,900.00	981,420.00	1,450,000.00	15,000.00	-
Kansas	3,294,187.59	968,997.59	2,325,190.00	929,912.59	39,085.00	534,210.00	1,719,900.00	12,000.00	-
Kentucky	3,109,680.80	1,798,480.80	1,311,200.00	1,744,280.80	54,200.00	828,000.00	483,200.00	71,080.00	-
Louisiana	3,259,939.84	1,219,176.55	2,040,763.29	1,170,194.55	48,982.00	1,768,699.76	261,797.53	-	-
Maine	724,678.95	352,384.78	372,294.17	335,284.78	17,100.00	257,428.17	114,866.00	10,266.00	-
Maryland	1,721,973.94	496,994.94	1,224,979.00	456,844.94	40,150.00	913,673.00	311,306.00	-	-
Massachusetts	1,423,226.47	381,541.47	1,041,685.00	349,486.47	32,055.00	387,275.00	654,410.00	-	-
Michigan	4,348,627.21	1,503,787.79	2,844,839.42	1,355,198.79	14,589.00	2,082,500.00	676,403.00	85,936.42	-
Minnesota	2,434,378.89	1,300,536.66	1,133,842.23	1,283,661.66	16,875.00	501,843.00	631,999.23	-	-
Mississippi	3,483,460.93	1,853,521.54	1,629,939.39	1,824,041.54	29,480.00	862,500.00	716,602.92	50,836.47	-
Missouri	3,202,477.83	1,626,421.96	1,576,055.87	1,565,129.96	61,292.00	867,975.09	560,699.00	147,381.78	-
Montana	1,141,767.24	405,889.68	735,877.56	397,009.68	8,880.00	346,395.56	389,482.00	-	-
Nebraska	1,992,923.56	786,086.38	1,206,837.18	776,186.38	9,900.00	751,977.18	450,000.00	-	-
Nevada	452,295.13	178,901.63	273,393.50	169,211.63	9,690.00	184,073.00	89,320.50	4,860.00	-
New Hampshire	525,799.44	178,402.43	347,397.01	169,875.43	8,527.00	222,147.01	120,850.00	4,400.00	-
New Jersey	1,577,112.96	362,603.79	1,214,509.17	345,103.79	17,500.00	685,954.00	524,859.17	3,696.00	-
New Mexico	1,036,282.04	431,281.72	605,000.32	408,686.72	22,595.00	470,000.32	135,000.00	-	-
New York	5,727,388.47	1,287,510.82	4,439,877.65	1,250,010.82	37,500.00	1,908,900.65	2,159,207.00	371,770.00	-
North Carolina	5,930,143.98	2,459,136.98	3,471,007.00	2,399,125.98	60,011.00	2,118,807.00	1,352,200.00	-	-
North Dakota	1,140,109.57	562,035.57	578,074.00	548,635.57	13,400.00	188,000.00	390,074.00	-	-
Ohio	3,269,073.87	1,707,540.87	1,561,533.00	1,666,372.87	41,168.00	808,132.00	711,489.00	41,912.00	-
Oklahoma	2,728,164.26	1,322,987.26	1,405,177.00	1,246,527.26	76,460.00	1,000,777.00	343,000.00	61,400.00	-
Oregon	2,401,755.29	560,423.27	1,841,332.02	522,908.27	37,515.00	1,329,468.02	511,864.00	-	-
Pennsylvania	3,380,592.94	1,656,330.94	1,724,262.00	1,640,875.94	15,455.00	1,272,018.00	450,000.00	2,244.00	-
Rhode Island	238,471.32	97,953.82	140,517.50	94,141.82	3,812.00	112,740.50	23,300.00	4,477.00	-
South Carolina	2,370,538.08	1,296,985.74	1,073,552.34	1,289,235.74	7,750.00	915,000.00	152,072.34	6,480.00	-
South Dakota	1,262,508.93	554,128.93	708,380.00	549,078.93	5,050.00	497,240.00	206,500.00	4,640.00	-
Tennessee	3,191,489.49	1,799,564.49	1,391,925.00	1,763,851.49	35,713.00	900,000.00	491,925.00	-	-
Texas	5,853,693.58	2,837,193.43	3,016,500.15	2,811,669.43	25,524.00	1,110,192.00	1,904,888.15	1,420.00	-
Utah	736,688.98	296,165.60	440,523.38	282,120.60	14,045.00	312,000.00	128,523.38	-	-
Vermont	622,751.22	230,091.43	392,659.79	225,011.43	5,080.00	268,409.79	124,250.00	-	-
Virginia	3,547,064.96	1,456,522.96	2,090,542.00	1,419,152.96	37,370.00	1,668,155.00	422,387.00	-	-
Washington	1,889,296.69	657,279.34	1,232,017.35	641,213.34	16,066.00	725,212.28	506,505.07	300.00	-
West Virginia	1,574,577.27	894,527.61	680,049.66	890,808.61	3,719.00	420,709.66	256,340.00	3,000.00	-
Wisconsin	3,194,767.35	1,315,412.76	1,879,354.59	1,274,112.76	41,300.00	713,505.00	1,165,849.59	-	-
Wyoming	743,744.78	258,105.12	485,639.66	254,105.12	4,000.00	331,416.66	154,223.00	-	-
Alaska	180,015.00	80,744.21	99,270.79	79,244.21	1,500.00	98,170.79	-	1,100.00	-
Hawaii	683,909.79	246,736.29	437,173.50	231,736.29	15,000.00	437,173.50	-	-	-
Puerto Rico	2,405,872.56	1,461,359.56	944,513.00	1,461,359.56	-	928,858.00	-	15,655.00	-
Unallotted	179,370.15	179,370.15	-	177,900.15	1,470.00	-	-	-	-
Regional Contracts	164,840.00	164,840.00	-	-	164,840.00	-	-	-	-
GRAND TOTAL	\$118,902,662.93	\$49,865,000.00	\$69,037,662.93	\$48,370,000.00	\$1,495,000.00	\$40,516,259.77	\$26,209,212.49	\$2,312,190.67	-

* - Preliminary Distribution

Table II.

EXTENSION SERVICE APPROPRIATIONS FOR THE
STATES, HAWAII, ALASKA AND PUERTO RICO

	1957	PROPOSED INCREASE 1958	TOTAL PROPOSED FOR 1958
Payments to States based on rural and farm population Smith-Lever Act, Sec. 3(b) & 3(c)2:			
Alabama	\$ 1,730,540	\$ 102,877	\$ 1,833,417
Arizona	233,082	13,450	246,532
Arkansas	1,415,272	81,618	1,496,890
California	1,191,385	90,585	1,281,970
Colorado	436,131	24,888	461,019
Connecticut	248,339	15,891	264,230
Delaware	121,195	5,185	126,380
Florida	561,826	39,314	601,140
Georgia	1,808,040	107,238	1,915,278
Idaho	329,998	18,819	348,817
Illinois	1,458,443	97,386	1,555,829
Indiana	1,212,395	81,435	1,293,830
Iowa	1,316,780	83,143	1,399,923
Kansas	890,413	50,539	940,952
Kentucky	1,700,280	107,207	1,807,487
Louisiana	1,128,824	65,911	1,194,735
Maine	321,706	19,489	341,195
Maryland	450,495	30,165	480,660
Massachusetts	349,487	24,705	374,192
Michigan	1,327,359	91,012	1,418,371
Minnesota	1,260,081	80,154	1,340,235
Mississippi	1,780,002	106,963	1,886,965
Missouri	1,492,870	91,836	1,584,706
Montana	328,710	16,866	345,576
Nebraska	746,840	41,907	788,747
Nevada	93,112	2,623	95,735
New Hampshire	169,875	9,089	178,964
New Jersey	345,104	24,217	369,321
New Mexico	298,847	16,897	315,744
New York	1,250,010	91,653	1,341,663
North Carolina	2,305,197	153,110	2,458,307
North Dakota	511,636	27,145	538,781
Ohio	1,651,163	114,100	1,765,263
Oklahoma	1,205,827	61,854	1,267,681
Oregon	468,908	32,239	501,147
Pennsylvania	1,634,876	123,952	1,758,828
Rhode Island	94,141	3,995	98,136
South Carolina	1,246,836	77,165	1,324,001
South Dakota	513,078	26,627	539,705
Tennessee	1,719,851	109,251	1,829,102
Texas	2,774,310	153,201	2,927,511
Utah	222,120	11,682	233,802
Vermont	213,012	11,193	224,205
Virginia	1,398,792	90,067	1,488,859
Washington	583,013	39,711	622,724
West Virginia	863,110	59,048	922,158
Wisconsin	1,253,433	81,709	1,335,142
Wyoming	173,605	7,229	180,834
Alaska	73,245	2,592	75,837
Hawaii	231,737	10,706	242,443
Puerto Rico	1,461,360	98,362	1,559,722
Subtotal	46,596,691	2,928,000	49,524,691
Special need funds Sec. 3(b) and 3(c)1 of Smith-Lever Act	1,133,309	122,000	1,255,309
Rural Development funds Sec. 8 of Smith-Lever Act	640,000	1,300,000	1,940,000
Agricultural Marketing Act funds (including contracts)	1,495,000	150,000	1,645,000
Total Payments and Contracts	49,865,000	4,500,000	54,365,000
Retirement Costs: Federal share of retirement costs for cooperative extension employees	—	5,260,000	5,260,000
Penalty Mail: Reimbursement to Post Office for penalty mail for Extension Service	1,650,000 a/	514,000	2,164,000
Grand Total	\$51,515,000	\$10,274,000	\$61,789,000

a/ Excludes anticipated supplemental appropriation in the amount of
\$514,000 included in the budget in 1957 for State Directors' mailings.

Table III. Statement of direct payments to and contracts with States, Hawaii, Alaska, and Puerto Rico, indicating those requiring offset by States and Territories, those not requiring such offset, and basis of distribution as estimated for 1958.

Item	Total Estimate 1958	Basis of Allotment	Amount paid without offset	Amount requiring offset
Payments to States, Hawaii, Alaska, and Puerto Rico	\$52,720,000:			
Smith-Lever Act				
Section 3(b)	\$31,597,279-Frozen		\$14,513,808:	\$17,083,471
	: by Sec. 3(b) of			
	: Public Law 83			
	: \$300,000-for Puerto			300,000
	: Rico; specified by			
	: law			
Section 3(c)	\$18,882,721			18,882,721
	: (9,063,706-Farm pop.:			
	: (9,063,706-Rural pop.:			
	: (755,309-Special			
	: needs			
Section 8	\$1,940,000-Rural		1,940,000:	
	: Development; on			
	: basis of special			
	: needs			
Payments and contracts under the Agricultural Marketing Act	1,645,000:	\$1,645,000-Basis of	<u>1/</u> 140,000:	1,505,000
		: approved projects		
		: and contracts		
Total, direct Federal payments ..	54,365,000:	54,365,000	16,593,808:	37,771,192

1/ Regional marketing contracts.

Table IV. Extension field agents under cooperative appointment with United States Department of Agriculture, June 30, 1954, 1955, and 1956.
(Extension workers not under appointment are excluded)

	: June 30, : 1954	: June 30, : 1955	: June 30, : 1956
<u>STATE WORKERS:</u>			
Directors and Administrative personnel	190	203	195
Specialists	1,813	1,982	2,141
Total, State staff	2,003	2,185	2,336
<u>COUNTY WORKERS:</u>			
Supervisors	679	684	709
Agricultural Agents (a)	5,694	6,482	6,658
Home Economics Agents (a)	3,870	4,064	4,083
Total, County staff	10,243	11,230	11,450
GRAND TOTAL	12,246	13,415	13,786

Number of agricultural counties in the
States, Hawaii, Alaska, and Puerto Rico 3,156
Number of agricultural counties served by
county extension agents 3,105

(a) Includes Club Agents.

STATUS OF PROGRAM

General: The Extension Service is the educational link between farmers and the total research facilities of the Department of Agriculture and the State agricultural colleges and experiment stations. Co-operative extension work in agriculture and home economics is out-of-school education, carried on by the United States Department of Agriculture, in cooperation with the State Land-Grant Colleges and county governments. County extension agents are jointly employed and work with farm people and other groups by furnishing them with information on research, economics, farm program facts, and by helping them to apply an ever-widening range of scientific knowledge in agriculture and home economics. The basic objective of extension work is to help people increase their managerial and technical skills in farming and homemaking and thereby improve their economic status, family and community life.

The Federal Extension Service functions as the Federal partner in the Cooperative Extension Service and administers the nationwide system of extension work, through the State Land-Grant Colleges and Universities within the framework of Federal laws governing this work; coordinates the educational activities of the Department and provides national leadership to insure a modern, progressive, highly productive and efficient educational program; maintains close liaison with the research and action agencies of the Department, and as the coordinator of the educational work of the Department, integrates such work into the educational work of the States and counties; works closely with other Departments of government and national private and public organizations and groups in order that all national effort of significance is coordinated with Extension work in each State and Territory.

Selected Examples of Recent Progress

Cooperative Extension Work

1. Reaching Farm People and Extension Influence: More than ever before, modern day farming calls for the application of research and economic information in a way that will keep the farm-family business in step with rapidly advancing technology. The job of State and county extension workers is to help farm families meet this ever-growing challenge. County agents estimate the total number of farm families assisted by extension work during fiscal year 1955 at approximately 4,100,000.

Studies made of the effectiveness of extension methods indicate that the greater the number and types of contacts a person has with a subject, the greater are the chances that he will put a recommended practice into use. Extension agents use many different

methods to get their message before the people. During 1955 county extension agents made more than 21 million personal contacts, consisting of farm and home calls, office calls, and telephone calls. However, with the demand for their time constantly increasing, it is impossible for county agents to give individual help to every family wanting it. Last year county extension workers wrote nearly 1 million news stories, made 206,000 radio broadcasts and 43,220 television appearances. They distributed 26 million bulletins, circulars, and pamphlets to help answer requests made through office and telephone calls, and farm and home visits. Total attendance at meetings was over 76 million.

Mass communications played an invaluable role in providing emergency information to victims of what the American Red Cross termed the fifth worst disaster in the history of that organization - the California floods of 1955 and 1956. As soon as it became apparent that residents of a 42-county area in northern and central California were facing a major disaster, the California Agricultural Extension Service mobilized all its forces to provide necessary emergency services and information to safeguard life and health, and to aid in the rehabilitation of farm and home equipment.

The extension staff prepared, published, and disseminated information to flood victims. Thirty-seven different leaflets were prepared and distributed with great speed within a 10-day period. Before normal communications could be restored, 4-H Clubs were called upon to help distribute flood information, and rural mail carriers were supplied sufficient copies of the leaflets for each farm home on their routes.

As soon as electric power service was restored, radio was utilized continuously by extension workers to broadcast information. Newspapers were furnished complete packets of emergency materials prepared by the Extension Service and, in most cases, published the information verbatim.

As soon as flood waters receded, demands for information and advice from extension workers on farm and home rehabilitation increased greatly. To meet these demands, State and county workers issued a newsletter entitled "Farm and Home Aids" regularly, broadcast two daily radio programs of up-to-the-minute information, and prepared 120 news articles during a two-month period.

2. Farm and Home Development: The whole farm unit approach in extension work has its roots in farm family needs and wants. It involves family participation, extension assistance, awareness of needs and problems, desire for improvement, willingness to take action, and acceptance of responsibility.

The farm unit work requires the formulation of immediate and long-time goals, a careful study of all resources, and study, testing, and selection of alternative solutions to problems. Significant

progress has been made in helping farm families recognize and solve their problems through the more intensive counselling made possible through the addition of new extension workers. During the first year of operation, there were approximately 50,000 farm families in the United States participating in an organized way. There is much evidence that these families are improving their abilities in management of the farm and the home, are making rapid application of the findings of research, and are improving their economic status without necessarily increasing total production. For example, in Pike County, Mississippi, 64 farm families are already proving the worth of the family approach. A survey of the progress, by families cooperating in the program presents a challenge to eventually extend this service to every farm family in the county. Progress made in one year by cooperating families through better planned farming indicates the gross farm income could be increased 48 percent the next five years. Because milk production averaged 71% above county average, participating farmers have been able to reduce the cost of production tremendously; beef calves produced by balanced farming cooperators sold for 37 percent more than the average. Values that can't be measured are improved diets, painted homes and better farm family living.

With the help of their county extension agents, farm families in Barton County, Missouri are paving the way to more efficient and profitable farming. Teams visit the various farms and work on such problems as water management and farmstead arrangement. Their activities also include livestock and dairy tours followed by grass silage demonstration, tour of soil fertility demonstration plots, and home remodeling. These tours are held on a county-wide basis. Farmers are proud of their accomplishments and gladly serve as demonstrators of better farming and homemaking methods. An example of the progress made and its effect on the county is the story on fertilizer. In 1948 Balanced Farming cooperators used 12 tons of fertilizer per farm compared to the county average of 3 tons. In contrast, 1953 Balanced Farming families used an average of 60 tons per farm. At the same time, fertilizer use has climbed on all farms, resulting in consistently lowered costs per unit of production.

In Cleveland County, North Carolina, farm and home development work was initiated with a group of families. As the families made plans and changes in their farm and home practices, they were inevitably drawn closer together and their problems became shared ones. These families did a good job of keeping records and after an 18-month period, extension agents from the records that were kept, determined progress that had been made. Farm and home improvements were valued at \$115,000, changes in dairying increased farm income by \$48,000; poultry income increased by \$240,000; all these, plus additional enterprises amounted to a total increase in farm income of \$372,000 or \$2,776 per family for the 18-month period.

A gradual change is taking place on some 2727 farms in 39 Indiana counties where the unit approach is being applied. In Grant County, 142 farm families enrolled in this endeavor solved or sought the solution to one or more basic farm problems in an attempt to improve their farm units. Eighty-two of the 142 families planned to re-organize their crop rotation, 76 studied their livestock program relative to efficiency and type, 24 made remodeling plans for their homes, and two planned new homes. The families make their own decisions regarding improvements they wish in their farm and home business. Agents provide counsel for the three major decisions that farm families are constantly required to make - what to do, when to do it, and how to do it. A summary of all plans developed in Indiana last year show that the average farm might potentially increase its net farm income by \$7998. A study made in one county showed the potential increase in net farm income to be 94.3 percent, using current farm prices. Assuming that only one-half the potential was achieved, the result would amount to \$4 million increase in income to the 2727 families. This is equal to approximately 40% of total funds, County, State and Federal available to Indiana for Extension work for years 1952-1955, during which period farm and home development work by extension was intensified. It is estimated that less than 4% of the Indiana Extension resources were devoted to this work during 1952-1955. This would result in a cost-benefit ratio of 1 to 10.

3. Rural Development: A long range coordinated effort to help alleviate the problems of farmers in disadvantaged areas is being conducted through State and county rural development committees and with the cooperation of Federal, State and local agencies and groups. Although other agencies will have much to contribute to this effort, the Extension Service will provide organization and operational leadership. While this work is conducted within the present framework of extension administration, the actual day to day activities involve non-farm as well as farm interests.

Experienced personnel have been employed and effective work is now under way in 54 pilot counties. For example, in one county in New Mexico, four lines of work have been initiated as follows: Youth (recreation), marketing, soil and water conservation, health and nutrition. In Lewis County, West Virginia, twelve subcommittees have been appointed on problems such as labor, transportation, marketing, water resources, etc. These committees directed the work in determining actual amount of surplus labor in the county and in interviewing low-income farmers to find out their needs, desires and wishes. These data are being used as a basis for setting up programs to help farmers improve their conditions.

On-the-farm assistance, with practical information aimed at higher incomes and better levels of living will not be the only type of assistance rendered. In areas of surplus labor, the establishment of new industries in the areas becomes an important item. Helping farm families to appraise their alternative possibilities and resources will be essential. Some families will need on-the-farm technical assistance; others off-the farm employment, and still others vocational training, health and social security information.

4. 4-H Club Work: 4-H Club work directly affects the individual lives and development of over 2,155,000 boys and girls. There has been a continuous, steady increase in 4-H enrollments. In spite of this trend, however, Extension's service to youth is not keeping abreast of population increases even in farm and rural non-farm areas. By 1960 the boy and girl population of 4-H age on farms will have increased 12.7% above the 1950 census and in rural non-farm areas 40.4%. About 17.8% of all farm and rural non-farm boys and girls are currently participating in 4-H work. In most homes "4-H" is a family affair and it influences the entire farm or household. Over a third of a million adults assist as voluntary leaders and committee workers.

Typical of how 4-H helps families is a case in Stark County, Ohio. When one of the 4-H Club members was a sophomore in high school, his father was injured in a farm accident. The son was able to step right into the breach as virtual manager-operator of their 100 acre dairy farm. Already at the age of 16, he owned 12 of the family's 47 cow registered Holstein dairy herd. Practical experience with his 4-H projects combined with learning about more efficient and scientific methods made it possible for the family to draw upon his technical and managerial skill to carry through a period of strain and heavy medical costs.

Most 4-H projects and educational activities are built around subject matter closely related to agriculture and home economics. In numerous cases, however, the program becomes broader and includes work of a citizenship, character-building or community service nature. Such is the "Seeing Eye Guide Dog" project in New Jersey. Approximately 150 are raised each year by 4-H Club families in a unique cooperative effort that has provided 4-H youngsters with one of their most satisfying projects.

5. Nutrition Deficiencies: National surveys reveal that many diets throughout the United States need to be improved to meet the daily allowance recommended by the National Research Council. Nutrients in farm diets most often below recommended allowances are calcium, vitamins A and C and, in some instances, protein.

Since milk is an important source of calcium and also provides protein, extension programs have emphasized the value of increased consumption.

North Carolina provides an example of what extension workers are doing through a long-range cooperative program to get more milk in the diet and to increase the consumption of milk. A study of dietary records from home demonstration club members in 1951 showed that 51 percent of women did not drink milk but consumed only that contained in cooked foods. Only 24 percent of the women drank the recommended quantity each day. Armed with these facts, North Carolina has used a long-time cooperative approach to increase milk consumption in that State. Programs on production, care, and use of milk have been conducted to encourage people of all ages to consume recommended amounts of milk for best of health. According to the North Carolina Dairy Products Association report, milk consumer sales increased 8-1/2 percent the first eight months of 1955 over the same period in 1954. The amount of milk consumed in schools is constantly increasing according to the State school lunch supervisor. The extra one-half pints of milk served increased from 5,624,000 in 1954 to 22,662,000 in 1955.

6. Coastal Bermuda Grass: In the 12 Southeastern States some 28 million acres of land have been diverted from cash crops (chiefly, cotton, tobacco, and peanuts) and farmers have found it difficult to find a profitable use for this land. With development of the pulp industry, a little less than half this diverted land has gone to trees; the rest has gone largely to grass. Until recently there was no good grass for this region. As a result, feed supplies and livestock profits were quite unreliable. The situation is changing. Development of a variety of grass called Coastal Bermuda at the Tifton, Georgia Experiment Station provided the southern farmer, for the first time, a grass that is literally tailor-made for his conditions. However, Coastal Bermuda produces no seed. It must be propagated by runners, and these cannot readily be moved. Planting is slow - five acres per man per day is a good rate. To meet these problems of planting, extension workers developed the idea of establishing nurseries as sources of planting stocks to local farmers. County agents have been responsible for encouraging the establishment of one or more nurseries in every county in Georgia and South Carolina.

In addition, county agents have established field demonstrations in great numbers to show farmers the advantages of Coastal Bermuda and also how to grow it under their conditions. In South Carolina there were 414 such demonstrations - almost 9 per county last year, covering a total of 9,323 acres. Records of these demonstrations show average returns equivalent to 7,880 pounds of hay easily worth

\$100 per acre. Despite the difficulty of planting, more than 350,000 acres have been put to Coastal Bermuda both in Georgia and South Carolina. These States have immediate goals of a million acres each. Substantial acreages have been established in all States extending from Texas eastward.

7. Fertilizer Assistance: A substantially larger net profit can be realized from the 800 million dollar yearly expenditure by U.S. farmers for fertilizer. Nitrogen alone is responsible for more than 50% of this cost. New nitrogen materials have made it possible to reduce the cost of this element 10 to 75%. This can be done by changing from some of the older more costly carriers to the newer, less costly forms. The attention of several States has been called to the savings that could be made by changing the form of nitrogen now in common use to one of the newer materials. For example, Georgia has accepted the task of bringing about a more efficient use of all fertilizers.
8. Sheep Improvement Program: Lamb production offers a solution to the problem facing farmers in many areas, of utilizing land diverted from surplus cash crops to the production of a commodity that is in short supply. During 1955, Extension workers assisted many new farmers in developing farm flocks of sheep, and also conducted Sheep Improvement programs to aid established sheepmen in improving the quality and efficiency of their flocks. Increase in farm flocks during 1955 was most noticeable in the South, with Georgia leading with 219% increase in breeding sheep numbers as compared with 1954, followed by South Carolina 160%, Florida 125%, Alabama 124%, Arkansas 122% and Oklahoma 120%. Many States made great progress during the year in Sheep Improvement Programs conducted by Extension.

As a result of intensive education efforts in recent years, the average fleece weight in many New Mexico commercial bands has doubled in the past 10 years with average lamb weight and percent lamb crop increasing in proportion. This is estimated to result in \$3,500,000 additional annual income for the growers.

9. Agricultural Engineering in 4-H: The application of engineering principles to agricultural production has been increasing steadily. This means that the farmers of tomorrow will need to be skilled in engineering if they are to be successful in farming.

Recognizing this problem, projects in 4-H Club work in the engineering field were initiated in such phases of engineering as tractor and machinery maintenance, rural electrification, farm shop, farm structures and soil and water management. The work was carried on through leader training clinics of local volunteer leaders and the preparation and dissemination of project literature and leader manuals.

The enrolled membership has increased tenfold in the last ten years. The 4-H membership in agricultural engineering projects was 25,000 in 1946. From 1946 the membership steadily increased to 255,000 in 1955.

10. Combine Harvesting of Small Seeded Legumes: The increased use of the combine for harvesting increased the problem of proper combine adjustment.

Extension agricultural engineers brought this problem to the attention of the research engineers and worked with them in the field to determine the solution. They designed and developed a verticle sickle bar to use on combines which lowered seed loss materially and determined the proper adjustment in the combine in order to harvest the crop without injury or undue loss. Extension agricultural engineers prepared bulletins and other teaching material, held combine schools, field demonstrations, meetings and used mass media methods to bring the information to the seed growers.

Wyoming reports certified seed growers effected a net income increase of \$100,000 a year by decreasing the amount of seed lost during harvest.

The percentage crop loss in California has been reduced from 25 percent to 6 percent. Last year over one-half of the certified seed growers in California attended seed-harvesting meetings. The extension agricultural engineer estimates a saving of \$40 an acre by proper harvesting techniques or a total of \$4,462,000 for the State.

11. Cotton Improvement: While yield is an important factor in reducing costs and increasing returns, the application of all proved practices has contributed also to lowering the cost of production and increasing returns. Texas reports a saving of \$20 per bale by harvesting mechanically and one-third of the Texas crop so harvested resulted in a saving of \$33,750,000. Another \$12,383,000 was saved on the Texas hoeing bill by the use of 38,161 four-row rotary hoe equipped tractors.

To insure attention to all practices important to lower costs and improved quality, the Extension Services are engaged in a complete program of cotton improvement. Better techniques are being vigorously pushed at no less than 11 stages in cotton production, beginning with the selection of land and reaching to the marketing of the crop. In 1955 there were 3,552 of these complete cotton demonstrations conducted in 10 Southern States.

The purpose of the demonstrations was to make proper and timely application of all applicable research designed to increase efficiency, improve quality, and to lower production costs. A study was conducted to reflect the results of the combined practices approach. From the data being analyzed it appears that the combined practices approach will result in greater efficiency and decreased costs.

12. Extension Assists the Forestry Industry in Oklahoma: An educational program was conducted during 1955 with 63 owners having more than 23,000 acres of commercial timberland. Growers and mill operators were assisted in the development of legal contracts for sale and the development of market outlets for mill waste materials as well as lumber. Five hardwood sawmills and one planing mill were assisted in developing markets for waste materials, resulting in an income of \$23,000 for materials that otherwise would have been waste. The largest timberland operation in Oklahoma was assisted in locating pulpwood buyers who would purchase salvage from logging operations. The owner was able to market 10,000 cords of pulpwood with a value of approximately \$100,000. Similar assistance was given to other operators.
13. Kansas Shifts to More Marketable Varieties of Wheat: During the past year, an intensive educational program was conducted with wheat growers in Kansas to make them aware of the needs and opportunities for shifting to varieties of wheat with strong gluten content. During the fall of 1955, 1,504,005 acres were changed to strong gluten varieties. The estimated increased sales value during 1956 resulting from this increase in varieties with better milling quality was \$4,512,015.
14. Texas - Egg Marketing: As a result of the extension program, the number of Texas counties where producers can sell eggs on a graded basis and the number of firms buying on grade has greatly increased. Over 40 million dozen eggs were sold on the basis of grade in 1955 at an average of 5 cents per dozen more than they could have received for current receipts. The 40 million dozen eggs sold on the basis of grade brought producers an estimated \$2,000,000 more than had they been sold as current receipts.
15. Water and Sanitation: Pressure water systems on farms are practically nonexistent in many localities of the Southeastern United States and poor farm and home sanitation is also a major health problem. In the spring of 1954 the Winston, Mississippi County Health Department in cooperation with extension agents made a simple rural sanitation survey to obtain general information about water supply, excreta disposal, and screenings of doors and windows. From the survey of 2300 farm families, 375 asked for a visit from the sanitation or

extension agent, which resulted in 112 wells being improved, 62 new pressure water systems installed and 102 septic tanks installed or improved. Later it was decided to extend the project to the Northeastern Mississippi region and a similar survey was made in 8 counties. A total of 24,500 farm families were surveyed. About 900 of those visited installed new pressure water systems and 700 further protected their wells by sealing and concreting. The idea has spread to several counties in Northern Alabama and in Tennessee.

16. Outlook Information Brings Good Results:

Apples: Outlook information proved highly beneficial to the Washington apple producers. The 1955 Washington apple crop increased 24 percent over the previous year and the largest since 1950. The marketing problem was made even more serious by the fact that the crop matured two weeks late. The trade was not fully aware of the seriousness of the situation, however, until the Extension marketing specialist met with dealers, cooperative managers, and extension agents, and growers, and published statements on the need for pushing sales rapidly all through the marketing season. The result was fairly orderly marketing of the crop with no accumulation of stocks and no dumping at the end of the season as happened five years earlier. Due to the larger crop, prices averaged slightly lower than for the shorter crop the previous year, but this outlook information, which encouraged moving the crop rather than storing for higher prices, saved the Washington producers and the industry millions of dollars.

Livestock: The timing of outlook information for the recommended livestock programs in Kansas has been extremely beneficial to the livestock producers in that State. Producers are assisted in developing production programs which will allow them to market during the normally seasonal high price period. For example, the Kansas "deferred" steer program is specifically designed to prepare the steer for market during the fall, while also making the best use of feed resources.

For lambs the outlook and production program stresses producing for market in late April and early May when prices are seasonally high. This year Kansas farmers following the recommended program received \$4 to \$8 more than producers who sold their lambs two or three weeks earlier or later. Kansas farm management records substantiated the greater returns from these recommended programs and indicated that in recent years the timing of production programs as indicated by the outlook, has meant the difference between profit and loss to many farmers.

Federal Extension Service

1. Farm and Home Development Program Strengthened: Leadership and assistance was furnished all State Extension Services in further strengthening and improving the Extension educational method referred to as farm and home development. Training of all program staff members, in the application of the farm unit approach as an educational method, was intensified to enable them to provide leadership and assistance to State Extension Services in the further development of this method. Sixty Federal staff members participated in training schools conducted by the Federal Extension Service in North Carolina, Kentucky and Pennsylvania in an "on the farm" situation. Various members of a task force participated in regional farm and home unit workshops and conferences, farm management committees and in regional summer schools. A task force of 15 Federal staff members assisted the States in developing a uniform concept of the farm and home unit approach; provided assistance in developing patterns of organization for carrying out the work; assisted States in conducting workshops and training schools for county and State staff; assembled and made available to States a complete file of State and Federal material for use in training staff workers.
2. Program Projection: Program projection has been initiated as a means of helping rural people to analyze more intelligently their situation, appraise potential progress and indicate desirable adjustments in current extension programs, as well as the level of extension service effort necessary to achieve greater agricultural and family living advancement. The Federal Extension Service assists the States in the following ways:
 1. Gives national leadership in strengthening the program building process through which farm people and others are able to plan changes and adjustments in production, marketing, family living and community activities in order to increase incomes, attain better living and conserve and use natural resources wisely.
 2. Provides Federal and State Extension Service staff members with a body of facts on the changing agricultural picture and their deep-seated meanings in terms of potential adjustments called for nationally and regionally in extension work.
 3. Provides materials and leadership in training activities designed to aid in developing understandings and skills that State and county workers need in order to make the analyses and to follow through on a course of action.

A comprehensive series of analyses of present national situations and probable trends which may have a bearing upon changing emphasis of Extension education were prepared by Federal Extension Service

staff members to assist both Federal and State extension personnel to carry out their responsibilities.

3. Administrative Procedures Improved: During the past year all of the Federal Laws, regulations and administrative procedures applicable to management operations of State Extension Services were reviewed and are being incorporated in handbook form for use of State Extension Services in the administration of the Extension program.

More intensified fiscal and management examinations were conducted during the year in each State and Territory office. At the request of several States, assistance was provided in developing and installing improved management procedures or in solving management problems.

Effective July 1, 1956 the Federal object classification codes prescribed for State Extension expenditures were revised. A reduction in number of object codes from 28 to 15 will effect economies in accounting and fiscal reporting operations of the States.

Arrangements were made whereby State Extension Services could utilize the services of GSA Stores Depots resulting in considerable savings to the State Extension Services.

At the request of all Eastern State Extension Directors a management workshop was held in Washington, D. C. for State Extension administrative personnel of the Eastern Region.

At their request the Federal Extension Service is conducting a detailed review of the Georgia Extension Service programs.

4. Federal Leadership in 4-H Club Work: The Federal staff provides educational leadership in the planning, development and implementation of 4-H club work programs (a) to help make available to young people information about agricultural, home economics and related subjects; (b) to assist the States and counties to develop methods and techniques for training young people to become vocationally competent and better citizens; and (c) to arrange and participate in national and regional events, conferences, training meetings and other activities of Extension workers, cooperators, and members which will implement the Extension program for youth. Liaison and close working relations are maintained with the National 4-H Club Foundation, National Committee on boys and girls club work, Interdepartmental Committee on Children and Youth, the President's Advisory Group on Fitness of American Youth, and others.

The annual national 4-H Club camp and the regional 4-H Camp held in Washington D.C. is the apex of the leadership, citizenship, and achievement programs for youth, conducted by the Federal Extension

Service. It is an opportunity for young people to see their government in action, take part in educational discussions, and visit the inspiring shrines of our democracy. At the same time the State 4-H leaders and Extension administrators meet for their official policy and program studies and conference.

5. Clean Grain: On a national basis, the Clean Grain Program received added impetus when the Federal Extension Service organized a special Clean Grain Committee to help bring all forces and pertinent information to bear upon the grain sanitation problem. One of the first steps taken by this committee was to call a meeting in Washington of grain industry and farm organization leaders, and representatives of educational and regulatory agencies to lay the framework for a national attack upon the problem. The Washington meeting spotlighted the need for an educational program that would coordinate the efforts of every individual and organization who has an interest in clean grain. To help do this, educational materials in the form of fact sheets, brochures, and visual aids were provided State extension services and other interested organizations and agencies. A comprehensive summary of all educational materials available from educational and industry groups was prepared and distributed to cooperators in the clean grain program. To further strengthen and coordinate the work on national scale, a special newsletter called CLEAN GRAIN NOTES is being sent to some 1,400 persons. It serves as a method of keeping cooperators in the clean grain program up-to-date on new developments and educational methods in the field of grain sanitation; also duplicates of 70 color slides on grain sanitation were made and distributed to 20 of the main grain-producing States.

The Extension Services in Kansas and North Dakota and the Federal Extension Service cooperated with a chemical company in the preparation of a series of tape recordings on clean grain. These tapes were sent just before harvest to 75 radio stations in the main grain-producing States. Reports show that there was good use made of these tape recorded programs.

Members of the Clean Grain Committee and others in the Federal Extension Service have taken part in commodity, professional, regional and State meetings where grain sanitation was discussed. They have also worked with their counterparts in the States in planning and organizing State programs, have appeared on radio and TV and have assisted in the development of educational materials. Assistance was given the Kansas Extension Service to help prepare an insect identification and control leaflet for use in leader training meetings. One hundred thousand copies of this publication will be distributed in Kansas, Oklahoma, Texas and Colorado. The exchange of ideas at regional meetings and in personal conferences has helped State specialists develop new and better programs.

6. Farm Management: Special emphasis is being given to farm and home business planning, ways of reducing farm costs; better understanding by farmers of new income tax regulations and social security programs; analysis of economic information in county program making; the use of outlook information in farm business analysis; and land-use and economic information in making "soil-bank" and other production adjustments.
7. Half of Mechanical Picker Operators Receive Training Through Extension Program: In the spring of 1955 the Cotton Council reported that about 25% of the cotton harvested with spindle-type pickers was causing losses to the spinning mills because of operational difficulties, excessive waste and other manufacturing problems.

In May, 1955 the National Cotton Council, the Federal Extension Service agricultural engineers, the principal cotton mechanization and ginning research engineers, and the manufacturers of mechanical cotton pickers met in Memphis, Tennessee to plan a program designed to improve mechanical picking of cotton. The cotton ginning and mechanization engineers of the Federal Extension Service were asked to accept the leadership in planning and conducting this educational program through the State Extension Services.

An educational program to reach the greatest number of owners and operators of mechanical cotton pickers was recommended to (1) inform them of the necessity of quality picking with machines; (2) point out the principal fiber defects caused by improper maintenance and operation of the mechanical pickers; and (3) secure a coordinated program of schools for operators, to be put into effect in areas of greatest concentration of mechanical pickers.

In all cases, ginners' organizations, farmers' organizations and others concerned with the success of cotton mechanization gave close cooperation and support to the program. The cotton producers, processors and consumers stand to gain millions of dollars through higher quality as a result.

8. Beef Cattle Performance Testing Programs: Research and on-the-farm results have shown that average weaned calf and yearling weights can be increased approximately 10 and 20 pounds respectively each year in herds where selection under performance testing is practiced, resulting in lowered production costs. The Federal Extension Service assisted in developing a nation-wide plan designed to standardize procedures for securing and evaluating records of performance that would be uniformly recognized and interpreted, and in coordinating the State programs with the national plan.

Twenty-three States now have organized programs and more are in the process of getting started. New Mexico reported over 200 registered herds in the "weight-for-age" program and one herd has increased the average yearling weight 150 pounds as a result of this project. The influence of improved bulls on commercial herds in the State is indicated by an increased production per cow of 2 to 3%, resulting in 3 to 4 million dollars added income.

9. Leadership in Educational Work with Farmers on Income Taxes: The 1955 Farmers' Tax Guide, which was prepared in cooperation with the Internal Revenue Service, to treat the less understood tax problems of farmers was published for the first time in the fall of 1955. Over 700,000 copies of this publication were used by county agents in their educational work with farmers. In addition to working closely with the Internal Revenue Service in developing the Tax Guide, that Service was kept informed of farmers' tax problems that need special attention.
10. Old Age and Survivors Insurance: The Federal Extension Service worked with the Social Security Administration in the development of educational materials to help farmers to understand the Old Age and Survivors Insurance program based on 1954 changes. More than a million copies of OASI LEAFLETS were distributed to farm people as one means of assisting them to better understand the Old Age and Survivors Insurance program.
11. Assistance to the States in Home Economics: The Federal Extension staff provides leadership and program support to State home economics programs. In providing this support close working relationships are maintained with many agencies of government, principally Agricultural Research Service and the Agricultural Marketing Service in the Department of Agriculture, the Office of Education, the Children's Bureau, and Public Health Service in the Department of Health, Education and Welfare, the Bureau of Standards in Commerce, and home economists in business who are working on national educational programs.

The Federal staff assists the States in training new State and county extension workers through State and regional conferences and workshops. A workshop on family financial management was held in Tennessee for State specialists from 17 States, and special short courses on the same subject for county workers were conducted in two States.

In cooperation with the Cotton Council, information and literature has been made available to help State and county workers keep abreast of the rapid developments in clothing and household textiles. In the recent industry-wide change in dress pattern sizes, one basic fact sheet was prepared to help meet requests of 1-1/2 million women

and girls asking for Extension help. This fact sheet was distributed to home demonstration agents and teachers of home economics.

12. Research and Training: To insure efficient use of the Extension dollar the Federal Extension Service is constantly studying the effectiveness of current programs and devising more effective ways to assist people to apply the results of research and advancing technology. Assistance is given the States in evaluating the effectiveness of Extension programs and teaching methods and in planning and conducting appropriate training programs to improve extension workers.

Three new areas of extension research received special attention during the year: (1) Farm and home development research projects were initiated and bench mark information collected; (2) the urban home economics evaluation project, designed to determine the extent homemakers in a large urban community are being reached and using information from the home economics extension program; (3) research to evaluate methods and procedures used in program projection and to measure results was completed. The current rapid changes in Extension's responsibilities have developed among State directors an acute awareness of the need for increased efficiency and increased training. Conferences and workshops have been organized for the training of leaders, and officers in Land-Grant colleges. A training conference was held at Knoxville, Tennessee on pre-service and graduate training for extension workers with forty-eight representatives from 29 States to consider how to improve preservice and graduate training for extension workers. A workshop for 63 State extension administrators from 47 States and members of the Federal Extension Service administrative staff was held at the University of Wisconsin in cooperation with the new National Agricultural Extension Center for Advanced Study.

13. Reading simplification: The Federal extension staff is endeavoring to make publications for farm people easy to read. Agricultural bulletins for farmers in the past have been criticized for their use of technical language not understood by farmers. Today in every State farm people can find readable extension bulletins on farming and homemaking. Extension editors throughout the country have been working on the simplification of farmers' bulletins based on readability. Through readability analyses of extension publications and subsequent writing clinics, specialists were trained to write simplified revisions in the farmers' language.
14. Developing and Improving Marketing Programs: The Federal Extension Service has been active in working with State administrators, extension specialists, and industry groups, in developing and

improving marketing programs. State extension staffs and industry groups were assisted in studying and analyzing their situation and developing programs in line with needs. For example, a member of the Federal staff met with industry leaders in Texas and administrators from the Texas Extension Service to discuss opportunities for improving the marketing of fruits and vegetables in the Rio Grande Valley. This area accounts for a large proportion of the \$50,000,000 production in Texas and is an area where little marketing educational work was being conducted. Following this, a great deal of interest in a marketing educational program was developed with producers, processors and handlers offering to provide matching funds for a project under the Agricultural Marketing Act.

15. Keeping the States Informed: Keeping the States informed of national developments, programs, and new research is accomplished through the maintenance of regular services to the States in the form of press releases, key policy statements, economic outlook information reports, field contacts, bulletins, leaflets, fact sheets, visual aids, and material for radio and TV programs. One of the major efforts during the year was increased assistance to the States in training county extension workers in the use of mass media methods. Staff members assisted 20 States in holding publications improvement workshops for 850 specialists; 23 States in holding training conferences which were attended by 1,700 State and county extension workers on how to make better use of visual aids in their teaching programs; 14 States in holding district and State conferences on methods of giving mass communications program support to farm and home development work.
16. Federal Extension Service Develops Training Conferences in Marketing: During 1956 Federal Extension Service held three regional training conferences for workers involved in Market Information for programs in cooperation with State Extension Services. Demand for assistance from the Federal Extension Service in the development of State market information programs for consumers during the past year has been steadily increasing. Regional training conferences provides a means of training State workers and advancing programs in the States.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1956, were actually received or programmed for 1957 or 1958. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	: Obligations, : 1956	: Estimated : Obligations, : 1957	: Estimated : Obligations, : 1958
Allocations and Working Funds:			
(Advances from other agencies and funds):			
Commodity Stabilization Service:			
Advances for technical assistance to Agricultural Stabilization and Conservation Committees in the administration of programs in Alaska:			
Administrative Expenses, Section:			
392, Agricultural Adjustment Act of 1938	\$800:	\$800:	\$800
Local Administration, Section			
388, Agricultural Adjustment Act of 1938	4,500:	6,700:	6,700
Total, Commodity Stabilization Service	5,300:	7,500:	7,500
International Cooperation			
Administration - For expenses in connection with training and technical assistance activities ..	90,857:	104,700:	- -
Total, allocations and working funds	96,157:	112,200:	7,500
Trust Funds:			
Miscellaneous Contributed Funds,			
Department of Agriculture:			
For cooperative work with land-grant colleges on appropriate in-service training activities through summer-session courses for extension workers	3,667:	3,500:	3,500
For a cooperative study to evaluate progress and effectiveness of the International Farm Youth Exchange Program	1,027:	652:	- -
Total, Trust Funds	4,694:	4,152:	3,500

(Continued on next page)

Item	: Obligations, 1956	: Estimated Obligations, 1957	: Estimated Obligations, 1958
Obligations Under Reimbursements	:	:	:
From Governmental and Other Sources:	:	:	:
Federal Extension Service:	:	:	:
From the proceeds of sale of	:	:	:
personal property, and for mis-	:	:	:
cellaneous services to other	:	:	:
accounts	6,946:	34,769:	31,572
TOTAL, OBLIGATIONS UNDER ALLOTMENTS	:	:	:
AND OTHER FUNDS	107,797:	151,121:	42,572

FARMER COOPERATIVE SERVICE

Purpose Statement

The Farmer Cooperative Service was established following the enactment of the Farm Credit Act of 1953 (Public Law 202, August 6, 1953), which transferred the research and technical assistance work for farmers' marketing, purchasing and service cooperatives, under the Cooperative Marketing Act of 1926 from the Farm Credit Administration to the Secretary of Agriculture. The Service conducts research, advisory, and educational work with cooperatives on problems of organization, financing, management policies, merchandising, costs, efficiency, and membership to help the three million farmers who are members of such organizations improve the operations of their businesses. It cooperates with the Extension Service, Land-Grant Colleges, Banks for Cooperatives, State Departments of Agriculture, and other agencies to bring about better understanding and application of sound cooperative principles and practices. The Service also advises other Federal agencies on problems relating to agricultural cooperatives.

The Service carries on its work through three program divisions - Marketing, Purchasing and Management Services. On November 30, 1956 the Service had 106 employees, 102 of whom were full-time and 4 part-time, all stationed in Washington, D. C.

	<u>Appropriated, 1957</u>	<u>Budget Estimate, 1958</u>
Appropriated funds	\$550,000	\$578,000

Salaries and Expenses

Appropriation Act, 1957, and base for 1958	\$550,000
Budget Estimate, 1958	<u>578,000</u>
Increase (for contribution to the retirement fund pursuant to P. L. 854)	<u>+ 28,000</u>

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase Retirement Costs (P.L. 854)	1958 (estimated)
1. Research and technical assistance for farmers' cooperatives	\$422,288	\$550,000	+\$28,000	\$578,000
Unobligated balance	4,712	--	--	--
Total retirement costs (P.L. 854)	--	--	[+ 28,025]	[+28,025]
Total appropriation or estimate	427,000	550,000	+ 28,000(1)	+ 578,000

INCREASE

(1) An increase of \$28,000 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes.

STATUS OF PROGRAM

The Farmer Cooperative Service conducts research, educational and advisory work for the benefit of over 3 million farmers who are members of approximately 10,000 marketing and purchasing cooperatives and several thousand business service associations. The Service acquires and disseminates information regarding farmer cooperatives to further their sound development. This work is carried on in cooperation with land-grant colleges, Federal and State extension services, and State Departments of Agriculture.

Current Activities:

The Farmer Cooperative Service is helping farmers' cooperatives improve their organization structures and operating methods to better serve the needs of farmers. Reduction in costs of farm supplies and improvement in returns for farm products calls for the use of more efficient management techniques in cooperative purchasing and marketing. Changes in livestock and crop production have required the establishment of new marketing organizations or the reorganization of existing associations. A good example has been the formation of cooperative livestock marketing associations in the South to meet producers' needs resulting from the expansion of livestock production as agriculture has become more diversified.

The trend toward large scale buying of agricultural products by chain stores and other large handlers calls for increased marketing services through cooperatives. Better integrated and stronger cooperatives can give farmers increased bargaining power, greater operating efficiency and other advantages of large-scale organization.

The Service is continuing to carry on active programs of long-range importance to improve membership and public understanding of cooperative principles and practices. Its annual statistics disclose National and State trends in growth and character of cooperatives.

The Farmer Cooperative Service completed work on 80 projects or specific phases of projects during the fiscal year 1956, and estimates that it will complete about 90 in 1957 and about the same number in 1958.

Selected Examples of Recent Progress:

1. New milk-distributing cooperative assisted. A regional milk-distributing cooperative was formed in 1954 to assure a market outlet for 3500 producers in five southeastern states who had been served by a firm going out of business. The newly-formed cooperative acquired the facilities and business of the discontinued firm and in doing so inherited many of its unsolved difficulties. Faced with heavy losses in becoming established, the cooperative requested an analysis of its operations and advisory assistance on its major operating problems. This study

by the Farmer Cooperative Service disclosed that operating losses could only be eliminated by a drastic reduction in operating expenses and the replacement of one obsolete plant. Nearly all the specific recommendations of the Service have been put into effect in varying degree and costs have been materially reduced. This assistance has substantially improved the chance that this cooperative will overcome its major difficulties and continue to provide a market for milk produced by its members.

2. Fruit and vegetable cooperatives aided. During recent years large-volume integrated wholesalers and retailers have increased in importance. They require suppliers of fruits and vegetables to have large volumes of uniformly graded, attractively packaged produce. Often they require such other services as washing, waxing, hydro-cooling and guaranteed shipments. Individual fruit and vegetable growers cannot furnish these services. Further, their former traditional sales outlets through local buyers cannot absorb the same quantities as in previous years since they represent a smaller proportion of the market. In Ohio, Pennsylvania, Massachusetts, New York, Florida, and Delaware the Service made studies to help grower groups develop marketing organizations or existing cooperatives to provide the services required by the large-volume buyers. These improved grower marketing organizations provide the required marketing services and they offer growers a means for effective bargaining.
3. Southern livestock producers helped. Diversification of agriculture in the South is resulting in a rapid increase of livestock production. This has called for the development of new livestock markets and better marketing methods. Farmer Cooperative Service has been working on this problem with extension workers and college livestock marketing specialists in Mississippi, North Carolina, South Carolina, Virginia, Kentucky, and Arkansas. It has paid special attention to methods of improving feeder calf sales. In Mississippi and Florida livestock producers associations have been aided by studies of their organization and operating problems.

In Mississippi assistance was given the State Extension Service in the organization of a cooperative association to serve livestock farmers on a state-wide basis. Because of limited experience with auction marketing, the management requested help in planning the facilities and the operating procedures necessary in handling large volumes at low cost. Suggestions made as a result of this study are helping the cooperative increase its livestock volume and reduce its labor requirements.

In Florida the Service made a study of the Glades Livestock Market Association of Belle Glade that developed ways to improve organization, financing, facilities, and labor utilization. Its recommendations included lowering the membership investment to broaden the membership base; increasing capitalization from \$100,000 to \$200,000; saving labor and expense through rebuilding the pens and alleys immediately adjacent to the scales, and installing hydraulic gates on scales and

selling more cattle in lots rather than by individual animals to improve labor utilization and to reduce operating costs. This study can be useful to other cooperatives, as well as other live-stock marketing agencies that plan to build, equip and operate a large local livestock market.

4. Marketing effectiveness of Oregon turkey cooperative increased. During recent years major changes have occurred in processing and marketing turkeys. Among these have been development of large-scale specialized processing plants, rapid shift from the New York dressed (blood and feathers removed) to ready-to-cook form, quick-freezing, better and more attractive packaging, and year-around availability of turkey to consumers at food stores, hotels, and restaurants. Organizations which have been slow to meet these changes are having serious difficulties. At the request of an Oregon turkey cooperative, Farmer Cooperative Service made a detailed study to help it market more effectively for its members. This cooperative handled over 5 million pounds of dressed turkeys in 1954-55. This study emphasized the ways in which the association could reduce marketing costs and increase returns to growers by taking steps to strengthen its financial set-up, improve membership relations, establish more definite sales policies and programs, and make facility and organizational improvements. The association has already put many of the recommended changes into effect and, as a result, is becoming one of the most progressive and useful turkey marketing organizations in the country.
5. Potato marketing cooperatives revitalized. During the past year the Service aided two regional potato marketing cooperatives with their problems of high operating costs, assigning management responsibility and authority, improving potato quality, eliminating waste, and recapturing sales outlets. At their request it carefully analyzed the operations of each cooperative and on the basis of the analysis made specific recommendations. These included methods to strengthen financial structures, internal organization, and membership and public relations programs, and to revitalize sales departments to cope with changing markets and consumption patterns. Many of these recommendations have been adopted and others are being adopted. In both cases the cooperatives have been greatly strengthened as a result of these studies. Both of these cooperatives are major factors in the potato industry and their revitalization will have a beneficial effect on the entire industry.

The Service also helped a new potato cooperative formed in New York a year ago. Before that growers in the area had no market organization of their own. Local buyers had developed sufficient strength to force growers to compete among themselves for the limited sales outlets. Producers wanted their interests represented through a grower organization. So they formed a cooperative that has already acquired enough volume to assure successful operation. This will benefit the entire area in which it operates. To help this association the Service prepared a report on how it could solve such problems as developing a sales program, defining the marketing responsibilities of the cooperative and the grower, and developing a membership and

public relations program. This work may mean the difference between a healthy and an unhealthy market for a large group of agricultural producers.

6. Operating standards developed for frozen food locker cooperatives. Declining demand for locker storage and the greatly expanded use of home freezers since World War II have caused locker cooperatives to change from strictly locker-rental enterprises to processing and merchandising businesses. These cooperatives have needed assistance in evaluating operations and in developing activities to improve their efficiency and overall usefulness to patrons. As a result of continuing study by the Service operating standards have been developed to improve labor productivity and utilization of plant and equipment. Positive benefits from these studies are illustrated by the following examples:
 - a. One Illinois association was suffering losses due to over-built processing and storage facilities. A Service study revealed excellent opportunity to slaughter and wholesale locally produced meat and to produce for sale cured products and commercial sausage. The Service helped the association set up a producing and merchandising program to meet this situation, and it is now making substantial savings. It is also adding to its processing facilities and equipment to handle increased volume.
 - b. Another association in the same State operates 5 locker plants and a large central processing facility. A Service study found that the association had insufficient volume to utilize facilities and labor efficiently, and also suffered from wide fluctuations in monthly volume. It recommended that the cooperative process and sell poultry as a partial solution to this problem. The cooperative now slaughters over 1,000 head per week (excluding custom poultry slaughtering), and is preparing to merchandise its products under its own brand name. This program will be expanded as fast as new sources of high quality poultry are developed. Poultry produced and sold locally commands a premium price in the area.
 - c. Labor productivity studies showed that from June through September the decline in custom processing volume was largely responsible for low annual labor productivity in most of the 28 Illinois locker plant cooperatives annually surveyed by the Service. These findings led to programs in the majority of the cooperatives for merchandising bulk quantities of fruits and berries to locker and home freezer patrons. Net returns to members have been substantially improved as a result of this change in operations.
7. Farm supply services strengthened. During the year Farmer Cooperative Service helped several farm supply associations on organization and operating problems. In Arkansas, for illustration, it made an analysis to help the Arkansas Farmers Association revamp its structure and

methods to meet new conditions and improve its performance. This organization serves 70,000 farmers through 48 local cooperatives. The association already has adopted a number of the recommendations which will greatly strengthen its efficiency and improve services to farmers through the local associations.

8. Egg federation improved. At the request of seven Ohio egg and poultry cooperatives, handling over 1 million cases of eggs for 13 thousand farmers in 1955, the Service made a comprehensive study of their sales federation. Although the membership and volumes of products have substantially increased over its 16 years of operation, the federation has failed to find sales outlets for the increased volume and to meet changed marketing needs. Suggestions to solve this problem have been favorably received by the federation and its member associations. Steps are being taken to recapture the position of leadership long enjoyed by these cooperatives in progressive egg marketing. As some of the recommendations call for major changes, their adoption will be achieved over a period of time.
9. Costs reduced by plant location studies. The Service has made several studies to help farmers locate cooperative facilities to serve them most economically. Such work involved analyzing available methods of transportation and transit arrangements and studying of alternative methods and costs of shipment for the commodities handled. For example, such assistance in helping locate a feed plant in a Midwest state will save farmers some \$40,000 annually in transportation costs. In several cases these studies have been made at the request of state agricultural colleges which do not have technical transportation specialists.
10. State cooperative councils appraised. At the request of the state cooperative councils the Service studied their organization, methods and problems. Such councils are now active in 31 states and serve over 3,000 farmer cooperatives, with a total membership of over 2 million farmers. These councils perform an important role in developing joint educational programs and in coordinating cooperative activities in the states served. The report, based on this study, shows the strengths and weaknesses of the present council programs and suggests better methods of organization and operation. The report will be especially helpful in giving guidance to new councils.
11. Public agencies assisted in cooperative educational work. Many colleges of agriculture and departments of vocational education carry on extensive staff educational training programs in agricultural cooperation. These agencies need technical information and assistance. During the past year the Service has issued a number of new publications for the special use of these agencies. It has also participated in leadership training workshops or clinics held by such educational workers in ten states. In this way the Service coordinates its work with the state agencies and helps develop stronger educational programs.

12. Cooperatives assisted on financing problem. Farmer cooperatives are confronted with many new and perplexing financial problems as a result of growth in business volume and expansion of services. Today's high price levels tie up large amounts of capital in accounts receivable. The necessity of carrying a larger inventory and a much wider range of goods than formerly puts pressure on the capital structures of many cooperatives, particularly those endeavoring to finance all their capital needs internally. Likewise, the high cost of new machinery and new construction places definite limitations on the expansion possibilities of cooperatives operating on a pay as you go basis and relying largely on patron capital to meet their financing requirements. Lack of capital and weak capital structure are problems of many farmer cooperatives.

Cooperatives in all parts of the country have recognized the need for more basic information on methods of cooperative financing. As a result of this interest the National Council of Farmer Cooperatives and the American Institute of Cooperation over a year ago jointly requested the Service to make a comprehensive analysis of the methods of cooperative financing. Over 1150 representative farmer associations of all types and sizes have furnished data for the study. The analysis has already developed much information long needed on sources of owner equity capital and on methods of returning savings to farmers in the form of patronage refunds or in retained savings. The study will provide a better understanding of the business procedures and methods of these important agricultural organizations.

13. National statistics on farmer cooperatives strengthened. Information on farmers' marketing and purchasing cooperatives provided annually has been made more useful by several recent improvements in statistical procedure. The changes provide more current listing of all associations and a better record of new and discontinued associations. Consistent progress has been made in getting more and better data from cooperatives for use in the annual survey. Ninety-two percent of the 10,000 farmer marketing and purchasing cooperatives are now providing such information voluntarily. Improvement has also been made in the form of presentation of survey results. These changes have resulted in a greatly increased demand for the most recent survey report. National farm organizations, cooperatives, land-grant colleges, teachers of vocational agriculture, other educational groups, public agencies, and research workers are making increased use of these statistics. The only available nationwide information on trends in the development and progress of farmer marketing and purchasing cooperatives is provided by Farmer Cooperative Service.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1956, were actually received or programmed for 1957 or 1958. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
<u>Allocations and Working Funds (Advances from other agencies):</u>			
<u>International Cooperation</u>			
<u>Administration:</u>			
For expenses in connection with training and technical assistance activities	\$7,525:	\$7,550:	- -
<u>Department of Agriculture, Agricultural Marketing Service:</u>			
For marketing research activities:	337,117:	360,400:	\$397,700
<u>Obligations Under Reimbursements</u>			
<u>From Governmental and Other Sources:</u>			
Salaries and Expenses	2,846:	- -	- -
TOTAL OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS	347,488:	367,950:	397,700

SOIL CONSERVATION SERVICE

Purpose Statement

The Soil Conservation Service was established by the Act of April 27, 1935 (16 U.S.C. 590a-590f). It assists soil conservation districts and other co-operators in bringing about physical adjustments in land use that will conserve soil and water resources, provide economic production on a sustained basis, and reduce damages by floods and sedimentation. The Service also develops and carries out special drainage, irrigation, flood prevention, and watershed protection activities in cooperation with soil conservation districts, watershed groups, and other Federal and State agencies having related responsibilities.

Conservation Operations Program Activities:

The Service provides technical and other assistance to farmers, ranchers and others through soil conservation districts and other cooperators in the 48 States, Alaska, Hawaii, Puerto Rico, and the Virgin Islands, to carry out locally-adapted soil and water conservation programs. As of June 30, 1956, farmers and ranchers had organized 2,721 conservation districts. The assistance furnished by the Service includes:

- (a) Soil surveys to provide physical land facts needed to determine the use capabilities and conservation treatment needs of each acre of farm and ranch land and the publishing of soil survey reports and maps which are useful also to other Federal and State agencies and the public in the development of special land-use programs and for other purposes;
- (b) Technical help to farmers and ranchers in developing and applying conservation plans which provide for the best possible use by the farmer or rancher of his land, labor, equipment, and financial resources;
- (c) The grant (at no cost to the Service) of some special types of equipment not readily available to the farmer but needed to establish certain conservation practices;
- (d) The operation of a limited number of nurseries for observational studies and field testing of new improved species and strains of grasses and legumes, trees, shrubs, and other plant materials that may be useful in controlling erosion and improving pasture and range land; and
- (e) Stream-flow forecasts developed from snow surveys in the Western States to provide for efficient seasonal utilization of available water supplies for irrigation and other purposes.

Watershed Protection Program Activities:

The Service has general responsibility for administration of the Watershed Protection program of the Department, and the formulation and development of its guiding principles and procedures. The program consists of

- (a) Making investigations and surveys of proposed small watershed projects and working with local sponsoring organizations in the preparation of project work plans;
- (b) Cooperating with States and other local public agencies in the installation of works of improvement designed to reduce erosion, floodwater, and sediment damage, and further the conservation, development, utilization, and disposal of water;
- (c) Making loans (by the Farmers' Home Administration) to local organizations to finance the local share of the costs of carrying out works of improvement; and
- (d) Cooperating with other Federal, State, and local public agencies in making investigations and surveys of the watersheds of rivers and other waterways for the development of coordinated water resources programs.

In cooperation with soil conservation districts and other local groups and organizations, the Soil Conservation Service provides accelerated technical assistance to farmers and ranchers in these small watersheds in the planning and application of soil and water conservation practices and technical and financial assistance in the planning and installation of water management and erosion control measures such as diversion ditches and dikes, waterflow retarding structures, debris and desilting basins, stream-channel improvements, floodways, gully control structures, roadside stabilization measures, etc. The Forest Service participates, generally by cooperating with State foresters, in planning and providing intensified fire protection and certain technical forestry assistance to landowners in applying forest and woodland improvement measures on non-Federal lands and by installing measures on lands under its administration. The Agricultural Research Service furnishes assistance in the assembly, correlation, and analysis of economic data needed in the planning phases of the program. Funds available for this activity are advanced to the Farmers' Home Administration for loans to local sponsors to finance their share of costs of the small watershed projects. The Weather Bureau and Geological Survey provide assistance in gathering and analyzing hydrologic data. The Bureau of Land Management and the Bureau of Indian Affairs participate in the planning and installation of works of improvement on lands under their jurisdiction.

Flood Prevention Program Activities:

Pursuant to the Flood Control Act of June 22, 1936, as amended and supplemented, and under policies established by the Secretary, the Service has general responsibility for administration of the Flood Prevention program of the Department, and the formulation and development of its guiding principles and procedures. Since the passage of the Watershed Protection and Flood Prevention Act (P.L. 566, 83rd Congress) the program is limited to the planning and installation in the 11 authorized watersheds of watershed improvement measures primarily for flood prevention.

The Soil Conservation Service plans and installs works of improvement such as floodwater retarding structures, stream-channel improvements, gully stabilizing and sediment control measures, diversions, floodways, etc., on the 11 authorized watersheds. The improvement measures are installed in

cooperation with local soil conservation and flood control districts and other local and State agencies. The Service also provides technical assistance to landowners to accelerate the installation of land treatment measures which contribute to flood prevention.

The Forest Service participates, generally by cooperating with State foresters, in planning and providing intensified fire protection and certain technical forestry assistance to landowners in applying forest and woodland improvement measures on non-Federal lands and by installing measures on lands under its administration.

Water Conservation and Utilization Program Activities:

Under the authority of the Acts of May 10, 1939 (53 Stat. 685, 719), October 14, 1940 (16 U.S.C. 590-z-10), as amended and supplemented, June 28, 1949 (Public Law 132) and September 6, 1950 (Public Law 760) the Service carries on a water conservation and utilization program in the Eden Valley project in Wyoming. This work has been completed on all other projects planned for development. Irrigated and irrigable lands (both Government and privately-owned) are developed for efficient use of irrigation water. Settlement opportunities are provided for veterans and needy farm families through the sale of newly developed farm units. Technical assistance is furnished to settlers within the authorized project area with their soil and water conservation and land-use problems.

Program Administration:

The Soil Conservation Service maintains its central office in the District of Columbia but most of its activities are highly decentralized to forty-seven State and three territorial offices, six cartographic units, six engineering and watershed planning units, and about 3,400 area and work unit headquarters which carry on the technical programs of the Service in conservation districts, watersheds, and water conservation and utilization projects. In addition, the Service has about 50 specialists in the fields of agronomy, soils, biology, forestry, information, plant materials, and range conservation who are attached to the Washington office but located at various points in the field, to provide for necessary program coordination and the technical assistance in those specialty fields requested by field operating personnel.

As of November 30, 1956, the Soil Conservation Service had 12,760 full-time employees (314 in Washington and the balance in the field) and 2,756 part-time employees who are generally employed in the field during the seasonal periods when there is need for additional assistance in applying conservation practices.

<u>Appropriated Funds</u>	<u>Appropriated, 1957</u>	<u>Budget Estimates, 1958</u>
Conservation operations	\$67,500,000	\$73,545,000
Watershed protection	a/ 17,500,000	25,500,000
Flood prevention	a/ 12,000,000	13,220,000
Water conservation and utilization projects	a/ 232,000	350,000
Total	<u>97,232,000</u>	<u>112,615,000</u>

a/ In addition, prior year balances available.

Summary of Appropriations, 1957 and Estimates, 1958

Appropriation Item	: Appropriated, : 1957	: Budget : Estimates, : 1958	: Increase (+)
Conservation operations ..	\$67,500,000:	\$73,545,000:	+\$6,045,000
Watershed protection	<u>a/</u> 17,500,000:	<u>d/</u> 25,500,000:	+8,000,000
Flood prevention	<u>b/</u> 12,000,000:	13,220,000:	+1,220,000
Water conservation and utilization projects ...	<u>c/</u> 232,000:	350,000:	+118,000
Total, direct annual appropriation	97,232,000:	112,615,000:	+15,383,000

a/ In addition, \$2,604,164 is available from prior year balances.

b/ In addition, \$1,740,205 is available from prior year balances.

c/ In addition, \$125,757 is available from prior year balances.

d/ In addition, \$1,000,000 is estimated to be available from prior year balances.

(a) Conservation Operations

Appropriation Act, 1957 and base for 1958	\$67,500,000
Budget Estimate, 1958	73,545,000
Increase	<u>+6,045,000</u>

SUMMARY OF INCREASES, 1958

To furnish technical assistance to farmers and ranchers in new soil conservation districts in planning and establishing soil and water conservation measures	+929,750
To accelerate soil surveys and the preparation of soil survey reports	+1,368,000
To extend technical assistance in conservation land use and treatment to low-income farmers in connection with the Rural Development Program	+395,500
For contribution to the retirement fund pursuant to Public Law 854	+3,351,750

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
.. Assistance to soil conservation districts and other co-operators:					
(a) Planning, application and maintenance of practices ..	\$61,922,407	\$66,958,000	+\$3,342,150	+\$2,693,250(1)	\$72,993,400
(b) Observational field testing of conservation plant materials ..	315,000	542,000	+9,600	- -	551,600
Subtotal ..	62,237,407	67,500,000	+3,351,750	+2,693,250	73,545,000
Unobligated balance	705,352	- -	- -	- -	- -
Total retirement costs (P.L.854) ..	- -	- -	[+3,351,750]	[+132,250]	[+3,484,000]
Total available or estimate ...	62,942,759	67,500,000	3,351,750(2)	2,693,250	73,545,000

(Continued on next page)

Project	1956	1957 (estimated)
Transfer in 1957 estimates to "Salaries and expenses, Office of the Secretary of Agriculture"	+7,241:	- -
Total appropriation or estimate:	62,950,000:	67,500,000:

INCREASES

(1) An increase of \$2,693,250 under the project "Assistance to soil conservation districts and other cooperators" as follows:

(a) \$929,750 to provide technical assistance to farmers and ranchers in new soil conservation districts in planning and establishing soil and water conservation measures.

Need for Increase: Landowners continue to organize new soil conservation districts under the provisions of the various State laws or add additional acreage to existing districts. Some of the additions are substantial both as to number of landowners and acreage added. It is important that the Service be in a position to render technical assistance to the landowners in these new soil conservation districts to plan and establish soil and water conservation practices as soon as the districts are organized and ready to start carrying out their program responsibilities.

The rate of district organization has gradually declined in the past few years because of the high percentage of the agricultural land now within soil conservation districts. Nevertheless new districts are still being formed at an average rate of about 4 per month. It is anticipated that 40 new soil conservation districts will be organized during the 1957 fiscal year and another 40 in the fiscal year 1958. The \$929,750 increase is to provide funds to staff the 40 new districts (or large additions to existing districts) expected in 1958.

Plan of Work: Additional technicians and aids would be employed as soon as possible after the beginning of the fiscal year and placed in older districts for training. As districts are organized, experienced technicians from the older districts would be moved to the new districts and would be replaced by the employees who were training.

(b) \$1,368,000 to accelerate soil surveys and the preparation of survey reports.

Need for Increase. There is great need for moving ahead faster with the National Cooperative Soil Survey. This inventory of land facts is

extremely valuable in the development and carrying out of the various conservation, flood prevention, research and related programs of the Department and of other Federal and State agencies and for other purposes. The need for accelerating the soil survey was emphasized in the report of the President's Advisory Committee on Water Resources Policy, in the report of the Great Plains Agricultural Council and in Section 119 of the Agricultural Act of 1956 (Public Law 540, 84th Congress).

The increase in the number of farmers and ranchers requesting assistance from soil conservation districts in the preparation of farm and ranch conservation plans has resulted in serious shortages of soil survey data in some areas. Also, the need is acute in other Federal, State, and local programs for which soil maps and reports provide basic land facts. Typical examples are the Department's current conservation needs inventory which will rely heavily upon soil survey data to evaluate the conservation needs of the country, and the new soil bank program in which soil surveys will provide information helpful in determining the land selection for both the acreage and conservation reserve. In addition, State and local subdivisions of Government are finding many uses for soil maps in their varied agricultural and construction programs as well as for tax assessment purposes. Banks and other lending institutions are making ever increasing demands for soil maps in connection with their farm loan programs.

Plan of Work: The additional \$1,368,000 would be used to speed up the soil survey work to more nearly fulfill the current demand for soil maps and reports. New soil surveyors would be recruited and trained on the job by experienced surveyors now in the field. To the fullest extent possible, considering current operation needs, the surveys would be conducted progressively for whole soil conservation districts or counties. Existing survey staffs would be supplemented to enable more efficient operation. Currently, many soil surveys are being made of individual farm units because of their urgent need for farm conservation planning. With additional staff it would be possible to increase the amount of progressive or block surveying which increases efficiency and quality of work. In addition to speeding up mapping work the increase would enable faster preparation of survey reports of soil conservation districts or counties.

(c) \$395,500 to extend technical assistance in conservation land use and treatment to low-income farmers in additional "pilot" areas designated in connection with the Rural Development Program.

Need for Increase: There is an urgent need to find a solution to the economic and other problems of low-income farmers throughout the country. The Department of Agriculture together with other Federal and State agencies is participating in a coordinated program in a number of "pilot" counties. Funds were provided in the 1957 appropriation to initiate this work. It is now proposed to extend this work to additional "pilot" counties. The basic resource of these low-income families is the land. They need help in getting the highest possible returns from their land and labor. An inventory of soils, topography, erosion conditions and other land facts is needed as a base to determine feasible crop and livestock production and conservation program alternatives

in each individual case. In many cases such data is not available. These farmers also need help in planning proper land use and establishing soil and water conservation measures.

Plan of Work: Additional soil surveyors and soil conservationists would be added to work unit staffs in the pilot counties designated for assistance. A work unit would be established in counties selected that do not already have one. The additional technicians would become a part of the existing organization but would concentrate their attention on the problems of low-income farm families. They would make soil surveys and interpret data and provide farmers the technical assistance needed to plan and install essential land use adjustments and conservation treatments. The conservation plans and installation of conservation practices would be coordinated with other farm and home management plans to provide a sound basis for the farm families in the selected counties to earn the maximum sustained income.

(2) An increase of \$3,351,750 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

For necessary expenses for carrying out the provisions of the Act of April 27, 1935 (16 U.S.C. 590a-590f), including preparation of conservation plans and establishment of measures to conserve soil and water (including farm irrigation and land drainage and such special measures as may be necessary to prevent floods and the siltation of reservoir); operation of conservation nurseries; classification and mapping of soils; dissemination of information; purchase and erection or alteration of permanent

- 1 buildings; and operation and maintenance
- 2 of aircraft; [and furnishing of subsistence to employees; \$67,500,000]***
Provided further, That not to exceed \$5,000 may be used for employment pursuant to the second sentence of section 706(a) of the Organic Act of 1944 (5 U.S.C. 574), as amended by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a):***

The first change in language inserts the word "and" to separate the last two phrases preceding the amount of the appropriation estimate, as a result of deleting the phrase described in the second change below.

The second change proposes the deletion of language authorizing furnishing subsistence to employees. Authority for furnishing subsistence to employees is now included in Section 5 of the Department of Agriculture Organic Act of 1956 approved August 3, 1956 (Public Law 979), and authority in the appropriation Act is no longer necessary.

STATUS OF PROGRAM

Conservation Operations

Current Activities:

The planning and establishment of soil and water conservation measures on farm and ranch lands is carried on primarily in cooperation with soil conservation districts. These are local units of government, organized under State laws and responsible to the land-owners and operators in the districts and to the State legislatures. They are founded upon the sound principle of local initiative, direction, and control and are formed only in response to the petition and favorable referendum vote of the land-owners and operators within the district boundaries. By the end of the 1956 fiscal year 2,721 soil conservation districts had been organized in all 48 States, Hawaii, Alaska, Puerto Rico, and the Virgin Islands.

Accomplishment of soil, water and plant conservation on the land requires the knowledge and skills of agricultural specialists trained in all appropriate technical fields. They work with farmers and ranchers in developing conservation plans which provide for the application of proper combinations of conservation practices for their individual farm or ranch enterprise. Soil conservation districts and cooperating landowners are assured of practical and high quality technical assistance on their land-use and land treatment problems. The best available technical knowledge and judgment can be focused on special, new or complex conservation problems by Service specialists headquartered in the field or the Washington office staff. Adherence to sound technical principles and coordination of various agricultural techniques is required at all levels of the Service to maintain high standards of quality in all aspects of the Service work.

The following types of assistance are being furnished to landowners and operators in soil conservation districts to carry out locally-adapted programs of soil and water conservation:

1. The services of soil scientists who make standard soil surveys and conduct special soils investigations essential to successful conservation planning and sound recommendations for the use and treatment of each acre of agricultural land, including the soil series and type, its depth, slope, degree and extent of erosion and other significant characteristics which are recorded on base maps in the field acre by acre. Appropriate detailed soils investigations are made to guide structural design or conservation practice specifications in special or unusual cases. The soil surveys are conducted cooperatively with the land grant colleges and other State agencies. The survey reports and related soil maps after publication find continually expanding uses in other Federal, State, county and local programs involving land use.

2. The services of soil conservationists, engineers and other conservation specialists and aides who help farmers and ranchers plan and apply individual conservation programs for their farms or ranches. These jointly developed programs for the orderly adjustment of the use and treatment of each acre of their land are consistent with the land facts disclosed by the soil survey, and the labor, equipment and financial resources of the land-owners and operators.
3. The grant to soil conservation districts of special equipment which is acquired from surplus at no cost to the Soil Conservation Service, to assist farmers or ranchers in establishing conservation practices on their lands, where the application of needed conservation practices has been delayed because appropriate equipment was not readily available or was beyond the ability of farmers and ranchers to purchase individually or in small groups.
4. Technical assistance for group enterprises. Many significant conservation problems can only be solved by group action of the land-owners and operators. These problems may involve irrigation or drainage of valuable agricultural land, or stabilization of critical erosion and runoff areas to protect industrial, urban, or agricultural properties from flooding and sediment damage. Where engineers and other specialists needed are not available from other local sources, Service technicians provide consultation and assistance for the investigation, design, and detailed planning of the treatment needed.
5. Streamflow forecasts which are developed from snow surveys in the western States and which serve as a basis for efficient seasonal utilization of water available for irrigation and other purposes.
6. The operation of a limited number of nurseries for observational purposes and field-scale trials of promising conservation plant materials to determine their suitability for erosion control purposes, and cooperation with commercial concerns in the propagation and utilization of new and uncommon strains of vegetative planting materials to promote adequate production and distribution for conservation uses.

In cooperation with other Federal and State agencies, some assistance is also given to other farmers and ranchers outside conservation districts. This assistance develops a better understanding locally of erosion and land-use problems, encourages more widespread adoption of conservation farming methods, and assures technical soundness of the practices applied.

In addition, the Service provides technical assistance to Agricultural Conservation Program participants in the planning, lay-out, and establishment of specified conservation practices, both within and outside conservation districts. Part of the cost of this work is paid from funds advanced by the county Agricultural Stabilization and Conservation Committees.

Examples of Recent Progress

New Soil Conservation Districts Organized

As of June 30, 1956, farmers and ranchers in the 48 States and territorial possessions had organized a total of 2,721 conservation districts comprising a total area of 1,546,456,056 acres. All of these districts had been formed under soil conservation district legislation.

During fiscal year 1956, a total of 56 new districts comprising 28,691,000 acres were formed. A total of 164 additions comprising 36,859,000 acres were made to 96 existing districts during the year. Most of the acreage in the additions was rangeland in Arizona which was added to existing districts as a result of a revision in the State law. Eight grazing districts were dissolved and one soil conservation district was subdivided into two districts. This made a net increase of 47 districts during the fiscal year 1956 and a net of 60,482,000 acres added to districts in 1956.

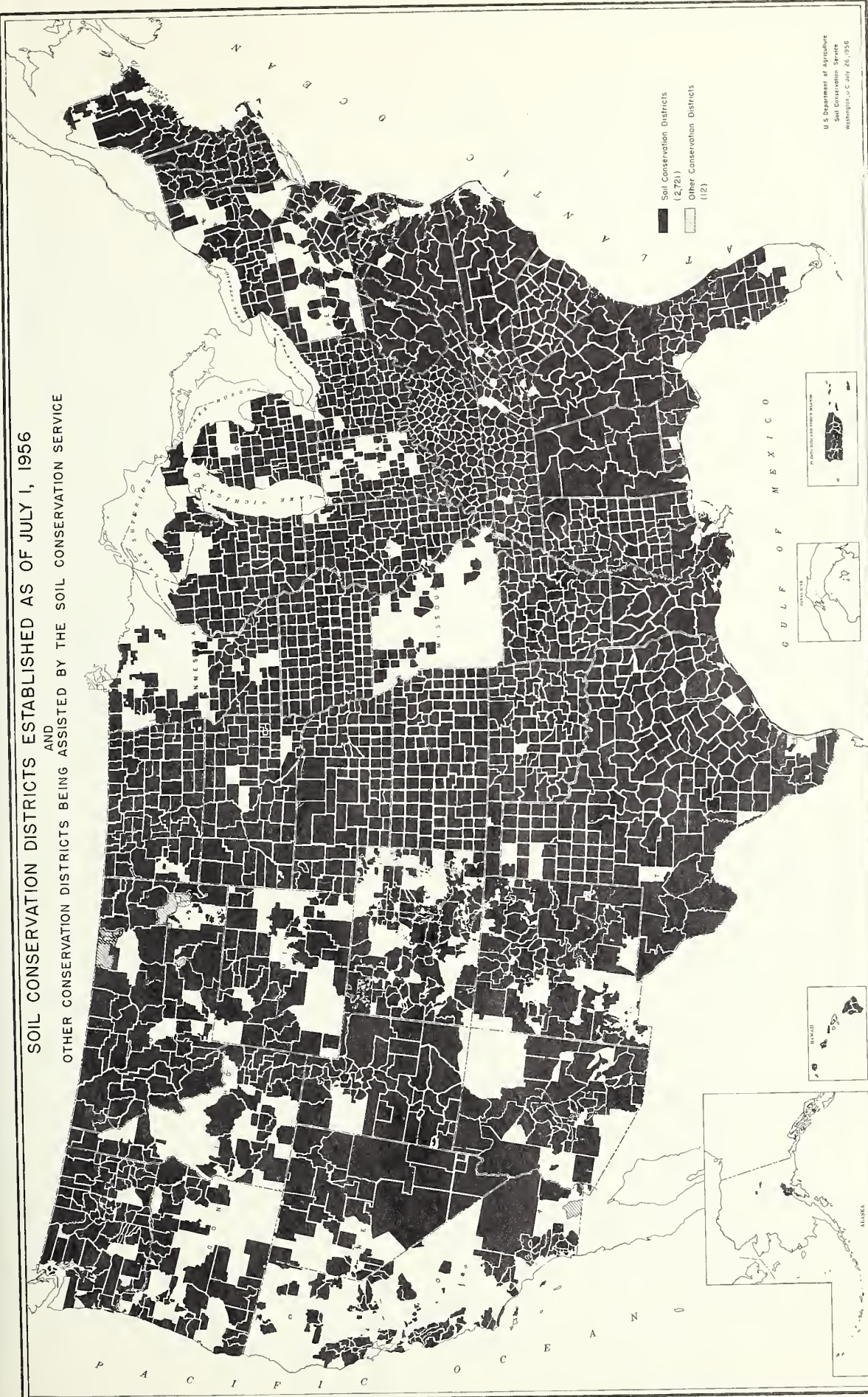
The 4,951,052 farms or ranches in districts as of July 1, 1956, were about 91% of the total farms in the nation. Sixteen States and two territorial possessions were completely covered by districts.

It is anticipated that 40 new districts will be organized in the fiscal year 1957 and another 40 in 1958 which will bring the total to 2,801 districts as of June 30, 1958. The following table shows information about the 2,721 conservation districts for which certificates of organization had been issued by July 1, 1956.

Kind of District	Location	Number of Districts	Approximate Area (Acres)	Number of Farms
Soil Conservation Districts	48 States	2,657	1,527,492,155	4,868,645
Soil Conservation Districts	Caribbean Area	19	2,269,711	54,270
Soil Conservation Districts	Hawaii	15	3,281,180	5,052
Wind Erosion Districts	Texas	1	964,480	721
Sub-districts	Alaska	9	4,391,000	924
Work Area (called districts)	Conn.	8	3,135,360	15,615
Grass Conservation Districts	Mont.	11	4,037,180	987
Imperial Irrigation District	Calif.	1	884,990	4,838
Total Conservation Districts		2,721	1,546,456,056	4,951,052

The attached map shows the Conservation districts which had been organized as of July 1, 1956.

SOIL CONSERVATION DISTRICTS ESTABLISHED AS OF JULY 1, 1956
AND
OTHER CONSERVATION DISTRICTS BEING ASSISTED BY THE SOIL CONSERVATION SERVICE



U.S. Department of Agriculture
Soil Conservation Service
Washington, D.C. July 26, 1956



Number of Farms and Acreage in Conservation Districts

Date	Number of Districts Organized	Total Acres in Organized Districts	Approximate Acres in Farms	Number of Farms in Districts ^{1/}
<u>Actual</u>	:	:	:	:
June 30, 1955 ...	2,674	1,484,974,221	974,945,000	4,884,470
Average per district	:	555,338	364,602	1,827
June 30, 1956 ...	2,721	1,546,456,056	1,005,456,965	4,951,052
Average per district	:	568,341	369,517	1,820
<u>Estimated</u>	:	:	:	:
June 30, 1957 ...	2,761	1,570,000,000	1,021,000,000	5,023,000
Average per district	:	568,634	369,800	1,819
June 30, 1958 ...	2,801	1,590,000,000	1,036,000,000	5,090,000
Average per district	:	567,654	369,868	1,817

^{1/} Based on 1950 Census of Agriculture. However, preliminary data for 1954 Census indicate only 4,782,000 farms and ranches in the United States, or a reduction of about 600,000 between the two censuses.

Conversion of Cropland to Non-Agricultural Uses

About one million acres of cropland have been diverted from cultivation since 1942 in each of the States of Ohio, Indiana, Texas, Georgia, and Florida. Seventeen million acres throughout the nation have similarly been converted to suburban housing developments, industrial and commercial uses, defense establishments, airports and highways, and other public and private uses during the same period. These conversions are equivalent to 5 percent of the total cropland acres of about 400 million acres or the cropland on 225,000 average farms and ranches. These conversions are being made at a rate of about 1,100,000 acres per year.

The Austin, Texas, City Planning Commission has asked the Soil Conservation Service for assistance in projecting a long time expansion program for the city. A soils map was made available to the commission for its use in planning future expansion. Soils descriptions were furnished explaining water percolation rates and suitability of the soil for agriculture. The city planners were interested in pointing city growth away from good farm land.

California has passed a State law that prevents the annexation by cities of zoned agricultural land unless farm landowners consent.

In many States, county governments are developing master plans based on land capability maps under which certain areas would be reserved for agricultural uses. Because of urban expansion and the need for an ever increasing amount of land for highway, airport, and other non-agriculture uses, decisions on the location of public and private non-agricultural developments should be based on a land capability inventory similar to that used by farmers and ranchers as the guide to their soil conservation operations.

National Inventory of Conservation Needs Started

The Department of Agriculture and other land-use Agencies and organizations have need for information that can be obtained only through a national inventory of soil and water conservation needs. This inventory would equip the Department to more effectively plan and carry out its responsibility in soil and water conservation. From it the Department and others would make reasonable estimates of the magnitude and urgency of the various conservation and other measures needed to maintain and improve the country's productive capacity for all the people. Seven Departmental Agencies under the leadership of the Soil Conservation Service are currently developing the methods to be used. Plans now contemplate cooperation with State and local agencies with a goal for initial completion in three years. The inventory will be kept current thereafter.

Based on statistical sampling and analyses, estimates will be compiled by counties of the soils and conservation practices and measures which landowners can carry out with their own resources, or with technical, financial or other assistance under going programs of the Department. Conservation needs will also be tabulated for publicly-owned land through the cooperation of the various agencies responsible for public land management.

Status of Great Plains Wind Erosion

Drouth in the Great Plains has resulted in increasing rates of wind erosion since 1950. Nearly 10 million acres were damaged during the 1955-56 blow season. More than 90 percent of this acreage was reported for the five Southern Great Plains States. The most severe windstorms occurred during February, March and April. Inadequate vegetative cover and continued drought conditions contributed to the acreage which was damaged. About 2.5 million acres of growing crops were destroyed. Farmers emergency-tilled nearly 10 million acres during the season to prevent further damage to their lands.

Outlook Alarming for 1956-57 Blow Season

With high spring winds and continued drought, the Great Plains area will likely suffer severe damage during the forthcoming blow season. Nearly 31 million acres of land in the Great Plains were already damaged or in condition to blow on December 1, 1956. This is an increase of about 43% over last year at the same time. More than 85% of this land is in the 5 Southern Great Plains States. More than 10 million acres are in Kansas and 6½ million in Texas.

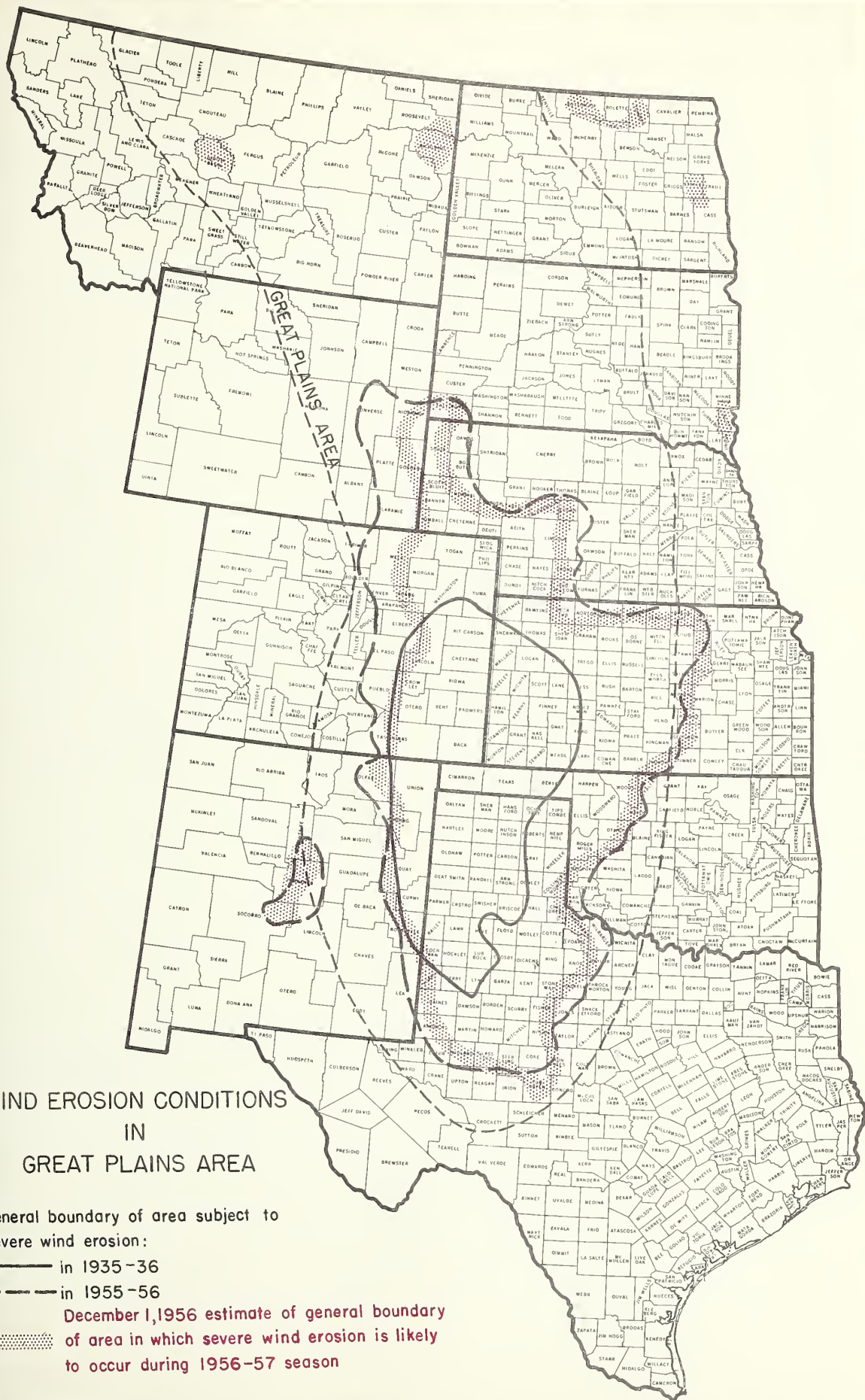
Almost 2 million acres of land had already been damaged by December 1956, of which 1.8 million acres was in the Southern Plains States. This is more than five times the damage than had occurred on the same date in 1955, and is 860,000 acres more damage than had occurred by the same date in the severe season of 1954-55. More than 3 million acres of cropland had already been emergency tilled, most of it during November. However, the dry, powdered condition of the surface soil over large areas had reduced the effectiveness of some of this emergency tillage.

A comparison of the wind erosion hazard on December 1, 1956 with conditions for the past two years is shown in the following table.

Estimates of Acres Damaged and in Condition to Blow
in Great Plains States
(As of December 1, 1954 - 1956)

	Land damaged	Additional Land in condition to blow	Total Land damaged or in condition to blow
	Acres	Acres	Acres
<u>December 1, 1954</u>			
Southern Great Plains	709,183	19,645,000	20,354,183
Northern Great Plains	421,163	6,415,000	6,836,163
Total	1,130,346	26,060,000	27,190,346
<u>December 1, 1955</u>			
Southern Great Plains	236,928	16,352,000	16,588,928
Northern Great Plains	116,170	3,571,000	3,687,170
Total	353,098	19,923,000	20,276,098
<u>December 1, 1956</u>			
Southern Great Plains	1,820,000	24,836,000	26,656,000
Northern Great Plains	172,000	4,074,000	4,246,000
Total	1,992,000	28,910,000	30,902,000

The attached map shows the Great Plains Area where December estimates indicate soil blowing is likely during the 1956-57 blow season.





The erosion hazard increases with prolonged drought. Part of the Great Plains had suffered continuous drought for 5 to 7 years by 1956. The subsoil moisture supply became more critical during the fall months of 1956 over most of the area. Of 276 counties reporting, 215 indicated subsoil moisture less than 18 inches deep. More than 36 inches of subsoil moisture was reported in only 4 counties. The following table shows the status of blow conditions by States as of December 1, 1956.

States	Cropland	Rangeland	Other Land	Total Land
	Acres	Acres	Acres	Acres
Southern Great Plains:				
Colorado	3,620,000	1,105,000	174,000	4,899,000
Kansas	9,841,000	466,000	58,000	10,365,000
New Mexico	930,000	266,000	1,000	1,197,000
Oklahoma	1,679,000	175,000	18,000	1,872,000
Texas	<u>5,061,000</u>	<u>1,320,000</u>	<u>122,000</u>	<u>6,503,000</u>
Subtotal	21,131,000	3,332,000	373,000	24,836,000
Northern Great Plains:				
Montana	525,000	52,000	11,000	588,000
Nebraska	982,000	336,000	22,000	1,340,000
North Dakota	1,017,000	35,000	2,000	1,054,000
South Dakota	569,000	39,000	11,000	619,000
Wyoming	<u>138,000</u>	<u>309,000</u>	<u>26,000</u>	<u>473,000</u>
Subtotal	3,231,000	771,000	72,000	4,074,000
GRAND TOTAL	24,362,000	4,103,000	445,000	28,910,000

Value of Soils Analyses

The Service operates three principal soil laboratories to make both physical and chemicals soils analyses. Five other soil laboratories are operated jointly with land grant colleges.

Thousands of individual analyses are made to determine the character and properties of the soils studied. Some of the properties studied are texture, salinity, alkalinity, fertility, structure, and chemical composition. The analyses are used by field soil surveyors primarily to maintain uniformity in mapping and to determine the capability and management requirements of the soil. The reasons for elemental plant nutrient deficiencies in soils of certain areas and the relation of these deficiencies to specific soil types and to animal nutrition are also being studied.

Soil Surveys Standardized

Prior to mid 1953, the Soil Conservation Service made soil conservation surveys while other agencies of the Department were gathering soils data to fit their particular needs. Consolidation of all soil survey activities of the Department in the Soil Conservation Service at that time required adjustment in soil survey mapping techniques and procedures to adapt the soil survey to all uses. A scientifically sound system of soil classification was needed. The requirements of all major users of soil survey information had to be known, evaluated, and included in the new survey. Standards for soil mapping units and descriptive legends had to be developed. Personnel from different agencies had to be welded into a working organization and the entire field staff oriented and trained in the newly developed standard soil survey procedures.

Substantial progress toward this standardization was made in the 1956 fiscal year in essentially every survey area. Uniform mapping unit descriptions were being prepared in all cases and a start has been made on the descriptive legends. All new survey areas this past year were started as the new type of standard soil surveys and work plans have been made in more than 400 soil conservation districts to adjust older existing surveys by field examination to modern standard soil surveys.

Survey Accomplishments

The following tables show the major survey accomplishments of the Service in assisting soil conservation districts and other cooperators. The two major types of surveys conducted by the Service are defined as follows:

- (1) Soil surveys are those where soil types, slope gradients, and erosion conditions and their boundaries are determined in detail by actual field examination and where classification is in accordance with the standard nation-wide system of soil classification, to furnish information for conservation planning, land inventories, publication, and other purposes.
- (2) Range surveys are those made of different range sites and range conditions. A range site is an area or areas of similar soil and climatic conditions capable of producing essentially the same kind and amount of climax vegetation. The range condition is determined by the kind and amount of vegetation present on the range site and is classified as excellent, good, fair or poor. Both range site and range condition are delineated on a map after actual examination in the field (usually with the rancher). The maps are used for conservation and watershed planning on range lands.

Some reconnaissance surveys not tabulated below, are made on a broader basis for problem area delineations and broad program planning.

SURVEYS:

Type of Survey	Unit	1956 Actual	Total as of 6/30/56	1957 Estimate	1958 Estimate
Soil Surveys ...	Acres	31,558,889	508,627,970	37,575,000	47,760,000
Range	Acres	10,774,586	55,494,502	19,800,000	20,160,000

Soil Survey Reports Published

During the 1956 fiscal year, 15 soil survey reports consisting of maps and texts were published. These were for Elmore County, Alabama; Mendota Area, California; Grand Junction Area, Colorado; Territory of Hawaii; Waldo County, Maine; Tunica County, Mississippi; St. Charles County, Missouri; Allegheny County, New York; Dutchess County, New York; Macon County, North Carolina; Montour and Northumberland Counties, Pennsylvania; Knox County, Tennessee; Mecklenberg County, Virginia; Pierce County, Washington; and Campbell County, Wyoming. This brings to 1,667 the total number of soil surveys published to date.

At the end of the fiscal year 1956, there were 27 soil survey maps and reports in the Government Printing Office for printing. Field surveys had been completed and correlation work finished on 65 additional areas for which preparation of the reports and maps was in progress. Field surveys were complete or nearly complete, and correlation work and report writing were in progress on a number of other soil survey areas.

Conservation Planning a Wise Investment

A farmer or rancher is interested in soil and water conservation because it pays off in production and income.

A conservation plan serves as a blueprint to the landowner and operator for the use of his land within its capabilities and the treatment of the land in such uses for protection and improvement.

In developing such a plan a farmer or rancher, and the technicians assisting him, must take account of the various kinds and amounts of soil on his operating unit, the amount of labor, capital and equipment available, and the requirements of the farming enterprise to be followed. On most farms and ranches there is more than one way to achieve satisfactory conservation results. The various practical alternative conservation measures must, therefore, be appraised in respect to the investment each will require and the probable benefits that may be expected under the conditions prevailing on each individual operating unit.

When the farmer or rancher has decided on the conservation measures he wishes to employ his decisions are recorded in his farm plan. A practical schedule for establishing the conservation plan is developed. This permits the work to be done over a period of years in logical sequence, with assurance that each conservation practice will fit into the plan for the entire unit. Thus a conservation farming system can be developed in an orderly and efficient manner, with a minimum of capital invested in relation to the long time benefits produced.

Conservation Benefits Studied

In a ten year study in three selected Illinois areas, costs and benefits of soil and water conservation measures and coordinated farm conservation plans were assessed to learn the economic effects on farms.

This study showed higher farm production and farm earnings were the measurable result of better soil conservation. Long time benefits were significant in each area studied. Conservation practices, such as contouring and fertilization, generally increased production and income the first year and thereafter.

On the individual Illinois farms studied the ten year average net earnings of farms with conservation plans were \$6.00 per acre per year higher than those on matching farms not having such plans.

One objective of the Service is to assist land-owners to develop a conservation plan for each acre of agricultural land in the country.

The following table summarized the major accomplishment of the Service in planning individual farms and group jobs in conservation districts:

CONSERVATION PLANNING OF INDIVIDUAL FARMS AND RANCHES:

Explanation	Active District Cooperators		Net increase in SCD cooperators and basic plans
	Number	Acres	
	As of June 30, 1955		Fiscal Year 1955
No. soil conservation district cooperators ...	1,552,336	454,427,099	98,049
SCD cooperators having basic plans	1,034,530	286,515,597	60,067
No. basic plans fully applied	164,673	33,008,585	2,337
	As of June 30, 1956		Fiscal Year 1956
No. soil conservation district cooperators ...	1,644,066	487,334,750	91,730
SCD cooperators having basic plans	1,102,804	306,991,999	68,274
No. basic plans fully applied	177,927	37,173,045	13,254
	As of June 30, 1957 (Est.)		Fiscal Year 1957
No. soil conservation district cooperators ...	1,735,000	513,560,000	90,934
SCD cooperators having basic plans	1,175,000	326,600,000	72,196
No. basic plans fully applied	201,000	42,009,000	23,073
	As of June 30, 1958 (Est.)		Fiscal Year 1958
No. soil conservation district cooperators ...	1,820,000	535,168,000	85,000
SCD cooperators having basic plans	1,250,000	347,500,000	75,000
No. basic plans fully applied	225,000	47,025,000	24,000

TECHNICAL ASSISTANCE ON GROUP JOBS:

Item	1956	Total as of	1957	1958
	Actual	6/30/56	Estimate	Estimate
Watershed Work Plans				
Number	180	406	380	420
Acres	7,092,929	13,781,679	17,200,000	19,010,500
Group Drainage Jobs				
Number	2,202	12,687	2,100	2,000
Acres	2,061,786	9,217,825	1,440,000	1,370,000
Group Irrigation Jobs				
Number	813	2,140	650	600
Acres	1,484,746	2,678,696	1,110,000	1,024,200

Basic Conservation Planning in Soil Conservation Districts

As of December 31, 1955, the Soil Conservation Service was cooperating with 2,690 organized soil conservation districts comprising 1,507,532,000 acres of land in the 48 States and in Hawaii, Alaska, and the Caribbean area. The following table shows by States, territories, and possessions the percentage relationship of number of operating units and agricultural land for which basic conservation plans have been prepared in districts with Soil Conservation Service technical assistance as related to the total agricultural land in soil conservation districts.

Of the 1,507,000,000 acres total land area in districts, nearly 1,100,000,000 acres were agricultural land on which the Service in cooperation with the districts was authorized to work. Included in this area are about 4,646,000 operating farms and ranches. This is 85% of the total land in farms and 90% of the farms in the United States.

Basic conservation plans have been prepared on more than 1,070,000 farms and ranches comprising nearly 300,000,000 acres of agricultural land as of December 31, 1955. This was 23% of all the operating units in districts and 27% of the agricultural land in districts. Variations in these percentages by States and broad geographical areas are shown in the attached table.

Basic Conservation Planning in Soil Conservation Districts
By states and Nationally, December 31, 1955

States	Total SCD's as of 12/31/55.	Agricultural Land in SCD's	Operating Units 1/ in SCD's	Basic Conservation Plans Prepared as of 12/31/55		% of Operating Units Planned	% of Agric. Land Planned
	Number	Acres	Number	Number	Acres	%	%
Northeast:							
Connecticut	8	2,554,700	36,690	2,456	272,035	6.7	10.6
Delaware	3	987,198	7,427	1,175	192,260	15.8	19.5
Maine	15	4,000,316	20,000	4,749	958,446	23.7	24.0
Maryland	23	5,407,128	34,381	10,002	1,421,183	29.1	26.3
Massachusetts	15	1,898,918	22,882	4,703	517,024	20.6	27.2
New Hampshire	10	5,563,345	31,391	3,263	559,237	10.4	10.1
New Jersey	12	2,291,628	25,051	4,464	503,102	17.8	22.0
New York	42	13,047,053	101,107	20,653	2,719,506	20.4	20.8
Pennsylvania	30	8,114,336	76,169	14,164	1,621,262	18.6	20.0
Rhode Island	3	485,000	3,392	836	101,278	24.6	20.9
Vermont	13	3,527,381	19,093	5,181	1,018,710	27.1	28.9
Virginia	29	21,084,929	138,479	29,097	4,903,392	21.0	23.3
West Virginia	14	9,676,941	73,011	23,347	3,017,262	32.0	31.2
TOTAL	217	78,638,873	589,073	124,090	17,804,697	21.1	22.6
Southeast:							
Alabama	12	20,852,784	148,985	46,871	7,923,113	31.5	38.0
Arkansas	74	28,959,793	145,047	42,595	8,614,668	29.4	29.7
Florida	57	20,612,495	48,574	17,362	5,950,119	35.7	28.9
Georgia	27	28,903,695	166,439	71,657	13,587,479	43.0	47.0
Louisiana	26	26,115,602	113,519	22,934	4,809,370	20.2	18.4
Mississippi	74	20,778,916	159,186	51,339	9,369,586	32.2	45.1
North Carolina	37	20,472,964	288,508	61,307	6,335,167	21.2	30.9
South Carolina	44	17,774,707	118,014	31,563	5,290,946	26.7	29.8
Tennessee	84	17,532,989	177,173	23,996	3,270,595	13.5	18.7
Caribbean	19	2,131,596	52,925	10,861	666,047	20.5	31.2
TOTAL	454	204,135,541	1,418,370	380,485	65,817,090	26.8	32.2
Cornbelt:							
Illinois	97	30,060,632	220,592	29,689	5,060,641	13.4	16.8
Indiana	69	13,668,931	109,892	14,530	2,168,622	13.2	15.9
Iowa	100	34,264,229	192,059	36,731	6,615,755	19.1	19.3
Kentucky	122	20,566,454	201,374	39,117	4,693,143	19.4	22.8
Michigan	73	18,184,672	168,660	16,814	2,089,156	9.9	11.5
Minnesota	70	22,518,294	117,734	14,696	2,671,016	12.5	11.9
Missouri	32	9,054,201	60,496	7,015	1,322,559	11.6	14.6
Ohio	85	20,561,855	166,521	27,113	3,784,552	16.3	18.4
Wisconsin	67	22,930,912	166,653	19,966	3,174,826	12.0	13.8
TOTAL	715	191,810,180	1,403,981	205,671	31,580,270	14.6	16.5
Great Plains:							
Colorado	99	26,390,129	39,401	10,935	9,820,142	27.8	37.2
Kansas	105	50,557,975	131,879	52,668	16,067,215	39.9	31.8
Montana	78	53,298,437	33,506	8,111	16,162,119	24.2	30.3
Nebraska	87	47,922,976	106,863	35,773	11,929,129	33.8	24.9
New Mexico	61	41,269,172	25,882	9,504	21,402,297	36.7	51.9
North Dakota	79	39,973,001	65,088	20,299	12,127,929	31.2	30.3
Oklahoma	86	38,926,777	143,621	57,502	13,841,411	40.0	35.6
South Dakota	66	39,383,817	59,628	20,365	10,914,133	34.2	27.7
Texas	171	155,550,960	358,818	92,570	50,675,257	25.8	32.6
Wyoming	42	19,675,727	10,149	3,404	3,733,951	33.5	19.0
TOTAL	874	512,948,971	974,835	311,131	166,673,583	31.9	32.5
West:							
Arizona	46	10,408,495	8,808	3,290	1,048,383	37.4	10.1
California	112	23,121,621	74,457	17,728	3,750,896	23.8	16.2
Idaho	42	15,496,589	28,570	3,550	1,464,604	12.4	9.5
Nevada	32	7,101,552	3,003	1,220	1,192,909	40.6	16.8
Oregon	51	14,696,205	39,022	3,711	1,805,124	9.5	12.3
Utah	48	13,246,659	25,834	6,904	4,287,580	26.7	32.4
Washington	75	23,364,549	74,189	11,996	2,848,642	16.2	12.2
Alaska	9	1,759,462	1,086	119	17,139	10.9	1.0
Hawaii	15	2,865,350	4,702	216	127,205	4.6	4.4
TOTAL	430	112,060,482	259,671	48,734	16,542,482	18.8	14.8
NATIONAL TOTAL:	2,690	1,099,594,047	4,645,930	1,070,111	298,418,122	23.0	27.1



Percentage of Total Agricultural Land Included in Basic
Conservation Plans in Soil Conservation Districts

The following table shows by States, the number of districts assisted which had from 10 percent or less to more than 50 percent of the agricultural land in these districts included in basic conservation plans for farms and ranches.

As of December 31, 1955, there were 346 districts which had more than 50 percent of the agricultural land in them covered by basic conservation plans, or nearly 13 percent of the total districts. About 43 percent of the districts were between 20 and 50 percent planned. The remaining 44 percent or 1,169 districts, were less than 20 percent planned. The acreage of agricultural land in each of the districts, on which these percentage calculations were based, include the public and private land on which the Soil Conservation Service is authorized to work, through Memorandums of Understanding and other working arrangements.

Only 125 districts were 65 percent or more planned, which was 4.8 percent of the total districts assisted. These were mainly small districts with a small number of operating units, or those located in relatively level bottom land areas, or a combination of small irrigated acreages with larger grazing areas. Even in the districts with a higher percentage of agricultural land planned, there were many smaller operating units yet to be planned. Frequent changes or revisions were made in basic plans already prepared, because of changes in ownership, types of farming and land use adjustments.

Acreage of Basic Plans Related to Agricultural Land
as of December 31, 1955

Proportion of Acreage in Basic Plans to Agricultural Land							Total SCD's
By Individual Districts 1/							Served
State	10% and Less	10.1 to 20%	20.1 to 35%	35.1 to 50%	More than 50%	in 1955 No. SCD's	
Northeast - Connecticut	2	6	-	-	-	8	
- Delaware	-	1	2	-	-	3	
- Maine	1	6	6	1	1	15	
- Maryland	-	5	13	4	1	23	
- Massachusetts	-	3	8	3	1	15	
- New Hampshire	4	5	1	-	-	10	
- New Jersey	1	4	3	2	2	12	
- New York	7	13	17	5	-	42	
- Pennsylvania	7	9	10	3	2	31	
- Rhode Island	-	1	2	-	-	3	
- Vermont	-	4	4	1	4	13	
- Virginia	7	4	14	4	-	29	
- West Virginia	-	2	6	4	2	14	
Total	29	63	86	27	13	218	
Southeast - Alabama	-	-	6	5	1	12	
- Arkansas	6	15	23	18	10	72	
- Florida	10	11	13	9	14	57	
- Georgia	2	1	3	8	13	27	
- Louisiana	5	12	7	2	-	26	
- Mississippi	-	4	21	18	31	74	
- North Carolina	13	5	6	12	1	37	
- South Carolina	-	6	23	14	1	44	
- Tennessee	46	6	11	10	10	83	
- Caribbean	-	-	15	2	2	19	
Total	82	60	128	98	83	451	
Cornbelt - Illinois	15	49	29	4	-	97	
- Indiana	26	20	15	4	2	67	
- Iowa	16	34	45	4	1	100	
- Kentucky	18	34	44	20	6	122	
- Michigan	32	24	13	4	1	74	
- Minnesota	33	14	14	5	3	69	
- Missouri	9	16	7	-	-	32	
- Ohio	12	39	34	1	-	86	
- Wisconsin	34	17	13	3	-	67	
Total	195	247	214	45	13	714	
Great Plains- Colorado	14	13	22	19	32	100	
- Kansas	6	17	41	28	13	105	
- Montana	14	11	17	11	16	69	
- Nebraska	2	25	38	15	7	87	
- New Mexico	4	8	9	8	32	61	
- North Dakota	4	16	22	24	13	79	
- Oklahoma	2	10	28	32	14	86	
- South Dakota	16	7	16	12	14	65	
- Texas	20	29	53	39	31	172	
- Wyoming	9	7	15	7	5	43	
Total	91	143	261	195	177	867	
West - Arizona	11	4	11	5	15	46	
- California	43	23	16	14	16	112	
- Idaho	26	10	4	1	-	41	
- Nevada	12	4	8	-	8	32	
- Oregon	31	5	5	5	3	49	
- Utah	7	9	12	9	11	48	
- Washington	40	13	15	-	6	74	
- Alaska	8	1	-	-	-	9	
- Hawaii	12	-	2	-	1	15	
Total	190	69	73	34	60	426	
Grand Total	587	582	762	399	346	2,676	
Percentage	21.9%	21.8%	28.5%	14.9%	12.9%		

1/ Includes all public and private land on which the SCS is authorized to work - i. e., the cropland, grassland, woodland, wildlife and other land used for agricultural purposes within the boundaries of soil conservation districts.

Virginia State Farm Improved

The Virginia State Farm now produces most of the food for its average population of more than a thousand inmates, and much for use at other State institutions. Ten years ago production was low, the red hills were gullied, and both soil and water were being lost. Supervisors of the Thomas Jefferson Soil Conservation District felt that the State farm should be a demonstration of good land use and management to the community and not a detriment to the District program.

The supervisors arranged for the local Soil Conservation Service technicians to discuss the possibilities of rebuilding and protecting the land with the Farm Superintendent. Converting to conservation farming with prison labor presented additional problems. However, after studying the soil map and the fields, they planned, acre by acre, how to use and treat each field.

The conservation plan, carefully worked out on the farm map, is the key to the successful program of soil building and farm improvement that is now over 90% complete. The orderly arrangement of the various crops, and gardens, the convenient placement of pastures for rotation of beef and dairy cattle and hogs, the location of irrigation reservoirs and sprinkler lines and all other details of the balanced farming program are fitted to the varied capabilities of the land. The Superintendent says that only with a good farm conservation plan could he direct such an operation on the 3,860 acre farm successfully.

A four inch rain in July did not muddy even one of the 10 ponds and reservoirs on the farm. The systematic rotation of truck crops, small grain and hay assures regular production of needed amounts of food for the prisoners and feed for the livestock. Yields are climbing steadily and each year the State farm supplies more of these products to other State institutions. Only faint scars of former gullies show in the fertilized pastures and through the contour stripped lands of crops and hay. The farm woodlands are improving while they supply lumber, posts, and other wood products needed. Living conditions are improved for farm wildlife.

The superintendent and the supervisors of the Thomas Jefferson Soil Conservation District are proud of the results too. They hold annual tours of the farm to show how the Commonwealth of Virginia is setting an example of good farming on its own land.

Water Supplies High in Northwest
Low in Southwest

Throughout the West, water users have come to depend upon stream flow forecasts to plan their operations in advance. The depth and water content of snow in the mountains, soil moisture conditions and the probable amounts and seasonal distribution of water that will be available for irrigation and other uses is published by the Service periodically from January to May each year. Notice of probable floodwater levels from spring runoff far enough in advance to permit orderly adjustments in reservoir storage and appropriate flood protection arrangements along the creeks and rivers has been possible through the use of snow survey data. Flood flows in the Columbia River and some of its tributaries were predicted in cooperation with the Weather Bureau as early as March 1956, using snow pack data. The early predictions allowed time for preparations to be made for the floods that were forecast. Water levels in key reservoirs in Montana, Idaho, Oregon and Washington were lowered by wasting several million acre feet of stored water in early spring to provide floodwater storage capacity. These measures reduced the flood peak from a probable 29.2 feet to 27.2 feet and, with other protective measures averted floodwater damage estimated at more than 25 million dollars.

The advance information on probable water supplies is always extremely useful to farmers and irrigation companies in 367 soil conservation districts in the west. About 11 million acres of irrigated land are served by the forecasts on all major streams and many of the smaller streams which serve as an important source of irrigation water supplies.

The benefits of the snow survey program to the irrigators alone far exceed the estimated \$200,000 Service costs. Interested States, power and irrigation concerns and others also contribute to the program. More than 1200 snow courses in the network are measured one to five times a year by some 950 snow surveyors. About 750 of these are regular Service employees who travel on skis, snowshoes, on snow machines and by airplane to take the readings of snow depth and water content.

The snow pack in the Columbia River Basin was extremely heavy in 1956 with water supplies forecast up to 180% of normal for some tributaries. Abundant streamflow was forecast throughout the entire Pacific Northwest. The central valley of California expected above normal supplies in most areas. Adequate supplies for normal uses were expected in Colorado, Wyoming, Northern Utah and the Colorado River Tributaries in New Mexico. Forecasts of only 20% to 40% of normal in southern New Mexico, Nevada, and Arizona required major adjustments from normal water use by such means as reducing planted acreage, planting crops with the least water requirements, improving irrigation systems, land-levelling, etc.

Conservation Information Programs

An increasing number of local, State and national groups carry on continuing soil and water conservation information programs. They depend largely on the Service for factual information, current progress reports, and guidance for these programs. Among them are youth, educational, industrial, labor, agricultural, conservation, religious, and civic groups. The Service cooperates with these and other groups to the extent resources and facilities permit.

At the community level, Service informational activities are directed toward helping local groups develop and carry on their own conservation information programs. The Service encourages the participation of and works closely with the State Extension Services in these activities.

Interest in watershed projects authorized by the Watershed Protection and Flood Prevention Act increased greatly as installation of works of improvement began late in the 1956 fiscal year. Because of demands created by this increased interest, and in response to requests from local groups, the Service assigned field information specialists in the 1957 fiscal year to five field locations. One information specialist was assigned to each location. Each serves about nine States. Salaries and other expenses are financed from both the Conservation Operations and Watershed Protection appropriations.

These specialists, with the help of Service information specialists in the Washington office, provide factual materials requested by local groups that are carrying on watershed information programs. They help Service field personnel by supplying current information on watershed projects, and by providing training in the techniques of adapting technical data for use in information programs of local groups.

New Plant Materials Tested

The Soil Conservation Service now has 12 plant materials centers (nurseries) in operation. Five of these are operated by the Service and 7 by cooperating State agencies. They serve as places where new plant materials can be assembled, evaluated, screened and increased for field evaluations. New cultural techniques are developed and extended to field trials. These centers are vital to the success of evaluating the newer materials in farmers fields. Such seeds and plants cannot be purchased from commercial sources and can only be derived from seed increase plots at these centers. The field evaluations number from 10 to 50 per State and are important in gaining farmer acceptance of the newer materials.

Plant materials technicians throughout the country have been instrumental in making an inventory of the needs for all types of plant materials planned for use in soil conservation districts. This information is helpful to seed growers, seed dealers and nurseymen in planning the production and sale of plant materials that are needed in soil and water conservation work. As an example, information developed by the plant materials technicians on the need for more conifers in the application of soil conservation

practices in Texas resulted in the Texas State Nursery planning to double its output of 25,000,000 pine seedlings a year. The centers are also an important factor in encouraging the production of seed and plants that the Service has proved to be useful and often superior to common plants.

Typical land-use problems on which plant materials technicians are striving to locate and stimulate commercial production of suitable vegetative materials for use in the field include the following:

1. Suitable vegetation to protect waterways resulting from the shaping of gullies and installation of water disposal systems on farms and ranches.
2. Adaptable aquatic plants and shrubs for shore stabilization of artificial and natural ponds, and bank protection of streams.
3. Suitable plants and proper techniques for stabilizing roadbanks and steep slopes on earthfills.
4. Adaptable vegetation and methods for the stabilization of coastal, lake, and inland sand dunes.
5. Establishment and maintenance of a protective cover in orchards to reduce runoff and erosion.
6. Evaluation of plants for salty land, low fertility soils, dry land, and for use on other difficult sites.
7. Protection for the roots of conifer seedlings to assure good establishment and proper survival of the key species in a windbreak.

Farm Woodlands Profitable

In cooperation with soil conservation districts and other appropriate organizations, the Soil Conservation Service works with land-owners and operators in providing them with information on their soil, water, and plant resources, helping them plan needed conservation practices and assisting them to install these practices as part of an integrated conservation program for their entire holdings. Service responsibilities on private woodlands are similar to those on all lands in private ownership regardless of the present use being made of them by owners and operators.

Most of the private lands now used for growing wood crops have similar soils to those which farmers are using for growing other crops. Management principles used in growing many cultivated crops are similar to those used in growing trees. The farmer's principal resources are his labor, land, equipment and his capital. The use of land for growing trees must be planned in relation to its relative suitability for any of the other crops grown by the farmer.

For example, in 1940, Soil Conservation Service technicians helped a farmer near Prescott, Arkansas develop a coordinated conservation plan for his family-size farm. The cultivated land, pasture land and woodland were all considered in relation to each other and to their conservation needs. He had eight acres in pine woods which he decided to continue using for woodland instead of cutting all trees and converting the land to either improved pasture or a cultivated crop. During the year the technicians helped him start a cropping program for the woodland field by showing him which trees to leave for future periodic crops and those to cut for current sale.

Since the beginning of this program in 1940, trees were harvested each five years. During the 15-year period the wood crop has produced an income of \$21.0 per acre or \$14 from each acre each year. In the winter of 1955 the timber cut netted \$850 or \$22 an acre per year. This labor income was more than twice the hourly rate of any other farm work. The income from the land was far greater than from other uses and the timber stand now left on the land has increased in value \$120 per acre since 1940 and is now worth more than \$300 an acre.

Walkways Improve Management of Marsh Ranges

Cattle walkways, earthen levees constructed into the marsh to increase their accessibility to livestock and encourage more uniform use, is one of the many conservation practices brought into increasing use by Service technicians working in the marsh country along the southern coast. Such walkways serve as trails, bedgrounds, calving locations, and a resting place for calves while the cows graze. They also permit the owner to work his cattle at any time of the year.

Draglines operating on mats are used to construct the walkways which are usually built 10 feet wide and 2 feet above average high water levels. An important key to their success is the practice of staggering the borrow-pits from one side of the levee to the other to prevent the flow of water off the range and to permit the cattle to graze from either side. The open water in the pits also serves as an effective firebreak to help control marsh fires and their borders provide a valuable nesting ground for waterfowl. Since the cattle will normally graze about a quarter of a mile into the marsh, the walkways are spaced about a half-mile apart. Construction costs average \$1,300 a mile but ranchers have found that as a result of improved use of the marsh range, death losses from drowning have been reduced, and calf crops have increased, which more than pay for the levees.

Strip Cropping and Stubble Mulch Effective in Utah

Unusual winds and continued drought caused considerable damage to the dry land acreage in the San Juan Soil Conservation District during 1956. Approximately 125,000 acres are dry farmed in this district, the principal crops being winter wheat and dry land "pinto" beans. About 50,000 acres were seeded to wheat in the fall of 1955. Of this amount 30,000 acres of crops were completely destroyed and an additional 5,000 acres damaged. Some of this land was so badly blown that rocks were showing which had formerly been covered with several inches of soil. Fence lines and roads, as well as adjacent cultivated and bench lands, became covered with

dunes from 3 to 8 ft. in height and many fences were completely covered. Some of the county roads were covered by at least 3 ft. of blown soil and were closed to automotive travel.

As of the fall of 1955, 12,570 acres were stripped cropped, mostly wind stripped, and 1,150 acres were properly stubble-mulched. The acreage protected by conservation practices were only slightly damaged from wind erosion in the spring of 1956, and much of this damage was caused by deposition of soil from nearby unprotected fields. The effectiveness of this combination of practices was so obvious to farmers that they began to install more of them. At least 25,000 acres have now been strip-cropped which is an increase of approximately 12,500 acres over last fall. Some 14,000 acres have been tilled with sub-surface type implements or stubble mulched, which is an increase of almost 13,000 acres. These conservation practices are being applied for the first time this year on 51 farms in the soil conservation district. Over half the dry farm land is now protected against wind damage.

Value of Foodfish Farming

The practice of using rice fields as part-time fish ponds in a rotation of rice and food fish is gaining interest in the rice growing areas of the South and West. This is a new kind of agriculture to most farmers of this area and is an example of how the Soil Conservation Service brings biology to bear upon problems of land use. Farmers using this rotation find they can produce profitable crops of rice and fish and at the same time improve their soils. Through soil conservation districts the Soil Conservation Service is providing technical advice on such matters as stocking rates, depth of water and methods of water control. At the same time the Soil Conservation Service is cooperating with State Experiment Stations and with the Agricultural Research Service in determining the effect of water rotation upon cropland soils, crop yields and weeds.

Application of Practices

The following table shows some of the major soil and water conservation practices applied in 1956 and estimates for 1957 and 1958 with technical assistance furnished by the Soil Conservation Service and other agency personnel who work under Soil Conservation Service supervision.

Major practices applied on farms and ranches of soil conservation district cooperators, ACP participants, and other land-owners assisted.

Type of Practices	Unit	1956 Actual	1957 Estimate	1958 Estimate
Contour farming	Acres:	2,965,786	3,050,000	3,100,000
Cover cropping	Acres:	3,832,090	4,700,000	5,000,000
Stripcropping	Acres:	971,131	1,075,000	1,100,000
Stubble mulching	Acres:	3,587,195	4,300,000	4,500,000
Proper range use	Acres:	29,954,863	31,650,000	32,000,000
Pasture planting	Acres:	2,766,565	2,865,000	2,900,000
Range seeding	Acres:	511,556	595,000	600,000
Tree planting	Acres:	351,479	353,000	400,000
Windbreak planting	Miles:	1,687	1,700	1,800
Wildlife area improvement	Acres:	402,974	514,000	500,000
Terracing	Miles:	52,187	60,000	60,000
Diversion construction	Miles:	5,590	9,500	10,000
Pond construction	Number:	78,869	80,000	80,000
Waterway developing	Acres:	79,229	107,000	110,000
Irrigation reservoirs	Number:	3,801	4,350	4,500
Sprinkler irrigation systems	Number:	7,362	7,375	7,500
Improved water application	Acres:	1,719,558	1,619,000	1,600,000
Irrigation water management	Acres:	617,742	660,000	700,000
Land leveling	Acres:	575,023	523,000	520,000
Farm drainage	Acres:	1,510,196	1,520,000	1,525,000
Open drains	Miles:	19,915	16,750	17,000
Closed drains	Miles:	19,573	15,600	16,000
Land clearing	Acres:	555,949	453,000	450,000

More than a hundred different practices and measures are used in the local programs of conservation districts varying from place to place according to different needs of the land. The above listed practices represent those most commonly used throughout the country.

About 24 percent of the cost of assisting Agricultural Conservation Program participants (including both district cooperators and other farmers) in 1956 was financed with "Conservation Operations" funds; about 73 percent with funds advanced from the item "Agricultural Conservation Program", under the 5% transfer proviso contained in the annual appropriation Act; and about 3 percent from non-Federal sources.

Major practices applied on group jobs

Type of Practice	Unit	1956 Actual	1957 Estimate	1958 Estimate
Ditch and canal excavation....	(Miles	1,268	2,000	1,940
	(Cu. Yds.	11,023,053	16,225,000	16,000,000
Spoilbank leveling	: Cu. Yds.	8,700,638	7,109,400	7,000,000
Channel improvement	: Lin. Ft.	249,833	700,000	800,000

Assistance on Drainage Problems

Technical assistance provided farmers on drainage practices in soil conservation districts continued at a high level during the year. The Soil Conservation Service provided technical assistance on drainage of 1,441,945 acres which required 20,587 miles of open ditches and 16,853 miles of tile drains.

In keeping with the current policy of the Department of Agriculture, the Service provides technical assistance on drainage only in those areas where the primary purpose is to provide adequate drainage for existing land used for agriculture and not to bring additional land into agricultural production. There is, however, an ever-increasing demand for technical assistance to install up-to-date drainage measures on at least one-third of the nation's best agricultural lands. Thorough investigations are made of all areas proposed for drainage to determine the source of the problem and the relative benefits to be gained from drainage or appropriate alternate treatment.

The usual problem is a high watertable in the soil or shallow surface water accumulations that reduce crop production and interfere with cultivation, harvest or other use of the fields. Occasionally wildlife values are involved when requests are received for draining swamp lands or pond areas. If such areas are suited for agricultural use and are drained, other areas of the farm better suited for wildlife use are often developed.

The solution of many of the most difficult farm drainage problems requires the cooperation of groups of farmers to construct group drainage works. The Service provided technical assistance for planning 1,947 group drainage jobs which benefitted 2,130,285 acres principally to help farmers obtain satisfactory drainage outlets. On large areas of flat lands, the installation of a well-planned group drainage system is frequently the first step in providing a water disposal system necessary for conservation farming.

The need for drainage has become evident in many areas where irrigation has been practiced for several years. Surface water disposal systems must be provided. In the Western States particularly, salt and alkali are usually associated with high water tables in soil and drainage is complex and requires a large amount of technical time for proper investigation and design.

Soils Testing for Structural Work Increasing

Data on the operations of the Soil Mechanics Laboratory at Albuquerque showed an increase in the demand for services amounting to more than twenty percent over the previous fiscal year. An appreciable portion of the increase was in connection with work done as assistance to soil conservation districts. Soil testing for structural works proposed under the Watershed Protection and Flood Prevention Act was just beginning to start at the end of the year, and, with the approval of a number of projects for construction, is expected to increase extensively during the current fiscal year. The services performed for the benefit of this program and also the Flood Prevention program are handled on a reimbursable basis.

Early this fiscal year the laboratory was moved to a more central location at Lincoln, Nebraska, and also to have the benefit of the Engineering and Watershed Planning Unit staff located there for consultant services.

Internal Audit Program Strengthened

In February 1954, the Service established a Program Appraisal and Internal Audit Unit attached directly to the Administrator's office. The purpose of this staff is to provide the Administrator with a means of appraising the effectiveness of operations at all levels of the Service. Audits of operations and business management activity within a particular State are conducted by audit teams of two or three men, who have background experience in both phases of the work. Audit reports containing findings and recommendations on all aspects of Service operations are prepared at the close of each audit. The Administrator of the Service follows up to see that required action is taken by the state conservationist and by members of the Washington staff, as needed.

Good progress was made during the first year of operations considering the small staff available and the necessity for developing audit forms, techniques and procedures in this new program.

During the fiscal year 1955 internal audits were made of eight States. During 1956 audits were made of ten States. A second audit team began operating in April, 1956 and recruitment is under way to add a third audit team. With three audit teams operating it is expected that each of the fifty-one major administrative offices of the Service will receive a comprehensive audit once every two to three years.

Progress in Internal Improvements

The Service made two comprehensive reviews during the fiscal year of savings effected as a result of management improvements. The reviews covered the calendar year 1955, and the first half of calendar year 1956.

Savings in 1955 and 1956, projected on an annual basis totaled more than 82.4 million and resulted from improvements in procedures, techniques, methods, and systems, adjustments in the use of personnel, and various economics in program and administrative costs. The accrued amounts were redirected into operations that resulted in greater amounts of conservation work. Among the many adjustments made in the Service was the elimination of 22 area offices. The work units reporting to them were regrouped under other areas or in a few cases placed under the direction of the State office in certain small States. The average cost of an area office is about \$18,000. The elimination of 22 of these, therefore, amounted to about \$396,000.

In addition, 41 work units were eliminated by combining work units or distributing the work load among several others. All of these consolidations resulted from thorough study and analysis of the particular conditions prevailing at each location and the services supplied farmers in each case. In a few instances there was no reduction in personnel. The savings consisted largely of space, equipment, or materials. In other instances the number of people had been reduced by attrition, and consolidations were found to be feasible through the use of improved procedures or by better organization of travel. In all cases the standard used was whether improved service to farmers and ranchers would result.

Notable also was the elimination of the Cartographic Unit at Albuquerque, N. M., which had been providing services for Arizona, Utah, Colorado, and New Mexico. The work was transferred to three other existing Cartographic Units at Fort Worth, Lincoln, and Portland, which are able to serve the four States at a savings of about \$30,000 a year. At the same time the Engineering and Watershed Planning Unit at Albuquerque was abolished, and the services performed for the four States were transferred to three other existing units which will perform the same service. A savings of about \$115,000 is expected in personal services and facilitating costs.

The Service is continuing its system of program (management) and functional inspections, which are comprehensive reviews of the work being performed at each level of the organization. During the fiscal year 1956 the Washington office made 28 program inspections of the States. The States made 235 program inspections of areas, and approximately 2,500 work units were inspected during the same period. In addition a large number of functional inspections were made by specialists in various fields such as engineering, range management, accounting, classification, procurement, etc.. Reports are prepared on all inspections for the purpose of administrative review. In all cases a system of administrative follow-up by the Washington, State, and area offices is carefully conducted to assure that needed corrective action is taken.

Plans of Operation and Schedules

Each year in the Soil Conservation Service all of the States, all of the areas, and all of the work units prepare annual plans of operation setting forth what is to be done, where, personnel involved, and an approximation of the timing. These plans of operations are reviewed by the supervisors at the beginning of the current year so that throughout the Service the part that each office will play is known early in the year. Coincident with the preparation of these plans of operations, the same offices develop schedules which show in detail where personnel will be doing certain jobs and at what time. The schedules are at first prepared on a long-term basis, but as time passes, the dates are refined until for several weeks ahead the exact dates are crystallized.

The development of work schedules of this kind in the Soil Conservation Service has now reached the point where it can be said that practically all of the work performed by the Service is done in a planned and scheduled way - - with due regard for necessary adjustments in schedules caused by weather and other unexpected factors.

Annual Operation Management Conferences

In the fall of each year all of the Deputy and Assistant State Conservationists who bear the responsibility for leadership in the management field meet in various sections of the United States to review progress. At that time, as during the fall of 1955, every phase of management is reviewed in order to ascertain what further improvements can be made.

For example, at the 1955 series of meetings, all of the ideas concerning better devices, techniques, and procedures were carefully screened and published so that all of the newest ideas were made available to all States.

Paper Work

Among the many phases of the management system of the Soil Conservation Service is the one having to do with the matter of forms. Authority to originate forms for State use is delegated to the State offices but as these forms are developed, they are automatically reviewed in Washington with a view to eliminating any that may duplicate or overlap existing ones.

There is a unit in the Service which, among its other duties, has the responsibility of maintaining a current running inventory of the forms used in the Soil Conservation Service. This unit sees to it that any form initiated anywhere in the Service is reviewed very soon thereafter by the technical or administrative division concerned to be sure there is no duplication.

At the end of each five year period - - and this occurred this past year - - a comprehensive five year inventory is made to recheck the current inventory to be sure that it is up to date. By these means, the excessive multiplication of the forms themselves and the number of copies involved is kept at a minimum.

PROPOSED REVISION OF PROJECT STRUCTURE

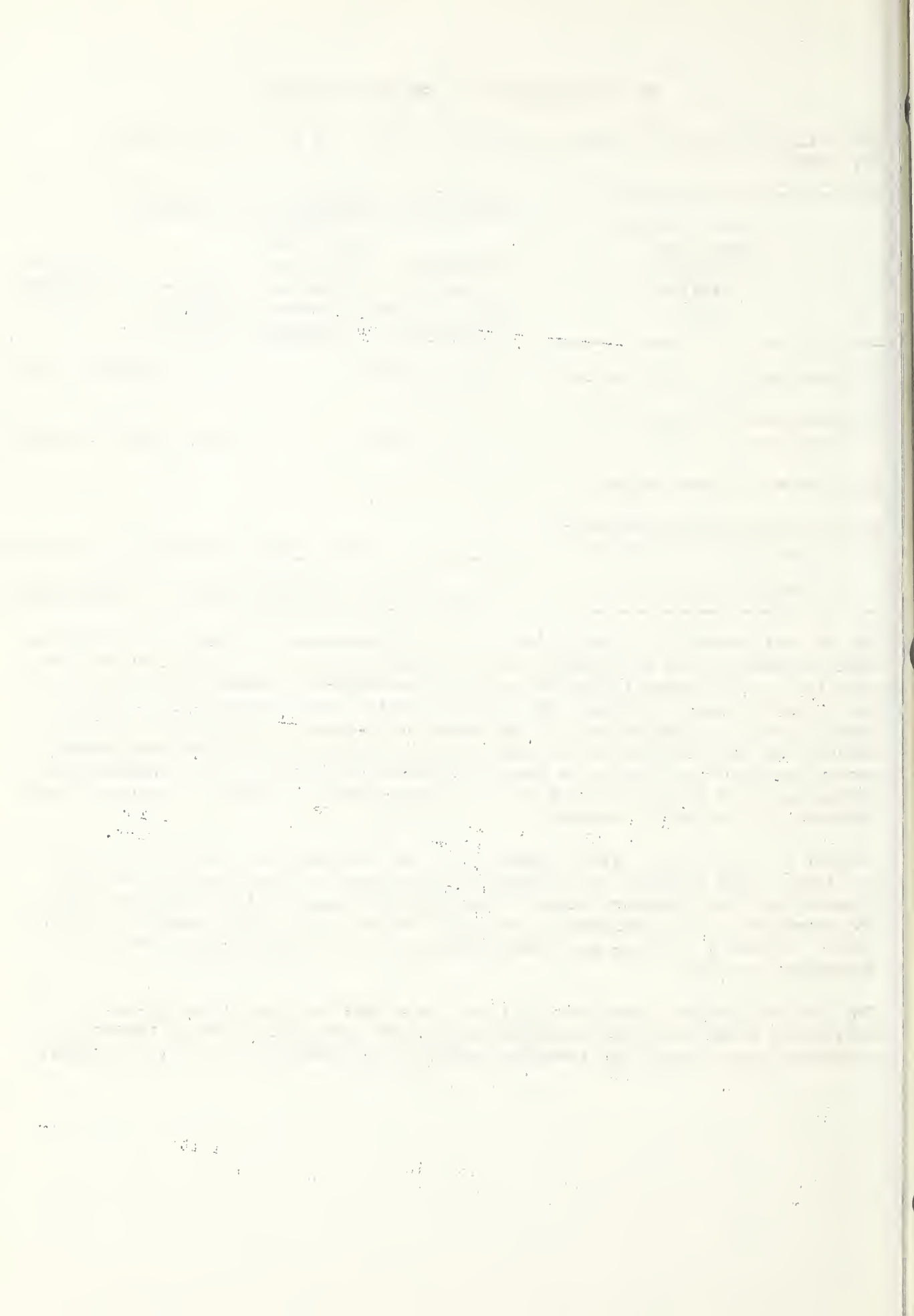
The following change in project structure is proposed in the 1958 Budget Estimates:

Proposed Project Structure, Budget Estimates, 1958	Project Structure in 1957 Budget				Budget Estimates, 1958
	Surveys and inves- tigations of water resources programs	Watershed planning and works of improvement	Total appro- priations, 1957		
1. Investigations and planning ..	\$4,261,800	- -	\$4,261,800		\$4,671,000
2. Installation of works of improvement	12,238,200	- -	12,238,200		18,290,000
3. Loans and related expense	- -	- -	- -		1,500,000
4. Survey and investigations of water resources programs ...	- -	\$1,000,000	1,000,000		1,039,000
Total appropriation	16,500,000	1,000,000	17,500,000		25,500,000

The project "Watershed planning and works of improvement" in the 1957 Budget is being separated into two projects in the 1958 Estimates, 1 "Investigations and planning" and 2 "Installation of works of improvement." Amounts for preliminary investigations and planning cover obligations that are incurred prior to the time projects are authorized for installation of works of improvement. These amounts are not included in project cost estimates in the approved watershed work plans which set forth the proposed Federal and local project cost-sharing arrangements on installation of works of improvement. Project 2 includes funds budgeted for the latter purpose.

Project 3 "Loans and related expense" is a new activity proposed in the Budget for 1958. This includes funds estimated for loans to local organizations to finance the local share of costs of carrying out works of improvement on P.L. 566 watersheds, as authorized by section 8 of Public Law 1018, approved August 7, 1956. Project 4 "Surveys and investigations of water resources programs" is unchanged from 1957.

The proposed project structure will provide a more meaningful breakdown of the activities under this appropriation since it is more definitive of the work conducted and reflects the changing emphasis and growing scope of the program.



(b) Watershed Protection

Appropriation Act, 1957 and base for 1958	\$17,500,000
Budget Estimate, 1958	25,500,000
Increase	<u>+8,000,000</u>

SUMMARY OF INCREASES, 1958

Increase to accelerate the development of watershed work plans in cooperation with sponsoring local organizations	+252,600
Increase to provide for the annual costs of the flood prevention features and for the Federal share of the annual cost of the agricultural water development and management phases of works of improvement planned to be installed in 1958	+5,843,400
Increase to provide funds for loans to local organizations to finance the local share of costs of carrying out works of improvement	+1,500,000
For contributions to the retirement fund pursuant to Public Law 854	+404,000

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement: Costs (P.L. 854)	Other	
1. Investigations and planning ...	\$3,314,939	\$4,261,800	+\$156,600	+\$252,600(1)	\$4,671,000
2. Installation of works of improvement ..	7,567,119	12,238,200	+208,400	+5,843,400(2)	18,290,000
(a) "Pilot" demonstration watershed ..	(7,550,781)	(7,700,000)	(+130,400)	(-2,692,400)	(5,138,000)
(b) Watersheds authorized under P. L. 566 ...	(16,338)	(4,538,200)	(+78,000)	(+8,535,800)	(13,152,000)
3. Loans and related expense	- -	- -	- -	+1,500,000(3)	1,500,000
4. Surveys and investigations of water resources programs	187,092	1,000,000	+39,000	- -	1,039,000

(Continued on next page)

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement Costs (P.L. 854)	Other	
Total retire- ment costs (P.L.854) ...	- -	- -	[404,000]	[44,500]	[448,500]
Subtotal ...	11,069,150	17,500,000	404,000(4)	7,596,000	25,500,000
Transfer in					
1957 esti- mates to					
"Salaries and expen- ses, Office of the Sec- retary of Agricul- ture"	5,757	- -			
1955 appropri- ation avail- able in					
1956	-1,679,071	- -			
1956 appropri- ation avail- able in					
1957	2,604,164	- -			
Total appro- priation or estimate ...	12,000,000	17,500,000			

a/ In addition, \$2,604,164 available from prior year balances.

b/ In addition, \$1,000,000 is estimated to be available from prior year balances.

INCREASES AND DECREASES

(1) An increase of \$252,600 to accelerate the development of watershed work plans in cooperation with sponsoring local organizations.

Need for Increase: The Watershed Protection and Flood Prevention Act, as amended by Public Law 1018, 84th Congress, provides the basis for co-operation between the Department and local organizations in installing works of improvement to reduce erosion, floodwater and sediment damages and for the conservation, development, utilization and disposal of water in small watersheds. A total of 547 applications for assistance in planning and installing works of improvement in these small watersheds had been received from local sponsoring groups by the end of the 1956 fiscal year. The number had increased to 599 by November 30, 1956. As of this same date approval had been given to providing assistance in preparing project work plans of 222 watersheds in 45 States. Work plans have been completed for 33 of these watersheds. A number of others which were essentially completed must now be revised to comply with the provisions of the amended act.

An increase in the rate of applications submitted by local groups for assistance under the Watershed Protection Program is anticipated as a result of (a) the more liberal cost-sharing provisions of the amended act, (b) the authorization for cooperation in the installation of works of improvement for the development and management of water supplies for agricultural, municipal, and industrial purposes and (c) the new loan provisions of the amended act. It is estimated that a total of 200 new applications for assistance will be received in the 1957 fiscal year and another 200 in 1958. This would bring the total number of applications received as of June 30, 1958 to almost 950. It is estimated that of this total about 400 applications would not qualify for planning for such reasons as technical or economic infeasibility, incomplete understanding of local program responsibilities, and inability of local people to assure essential land treatment.

About 104 watershed work plans are expected to be completed in 1957. The estimate would enable completion of another 130 work plans in 1958. This would leave 135 watersheds in the process of planning and 122 awaiting planning assistance as of June 30, 1958. All States having enabling legislation and from which applications for assistance with watershed projects have been received are being given some planning assistance. However, the anticipated backlog of applications and the intensified local interest apparent in some States is such that the rate of planning needs to be accelerated. Unobligated 1956 fiscal year balances of planning funds amounting to \$193,110 will enable beginning this accelerated planning program during 1957.

The following table summarizes the number of project applications and plans approved under Public Law 566 as of June 30, 1956 and estimated for 1957 and 1958.

Item	Fiscal Year				Total 1955-58
	1955	1956	1957	1958	
Applications received	353	194	200	200	947
Watersheds approved for planning	68	104	119	130	421
Watershed plans approved for installation of works of improvement		13	70	80	163

Plan of Work: Part of the increase requested would be used to employ additional watershed planning specialists and aids in those States where sound program development requires that there be some acceleration in preparation of watershed work plans. The remainder would be used to place on a full-year basis in 1958 planning staff employed for part of the 1957 fiscal year with balances available from the prior years.

(2) An increase of \$5,843,400 to provide for the annual cost of the flood prevention features and for the Federal share of the annual cost of the agricultural water development and management phases of works of improvement planned to be installed in projects in 1958.

Need for Increase: A total of 136 work plans are expected to be prepared by the end of the 1957 fiscal year for watershed projects initiated under authority of the Watershed Protection and Flood Prevention Act, as

amended. Thirteen projects were approved for operation in June 1956. An additional 70 watershed projects are expected to be approved for operation during the 1957 fiscal year. The local sponsoring organizations will proceed with installation of works of improvement on these 83 projects during 1957 with technical and financial assistance from the Department.

An increase of \$8,535,800 is needed to carry on planned full-scale operations on these 83 projects and an additional 80 projects expected to be approved for operations during the 1958 fiscal year. Of this amount \$5,843,400 would be provided by the proposed increase in the appropriation and the remaining \$2,692,400 will be available within the current appropriation as a result of reduced requirements on the "pilot" watersheds. It is estimated that work will have progressed on these projects to the point that there will be about 24 of the original 58 projects that will continue in an operations stage after the close of the 1958 fiscal year.

Plan of Work: The work plans for the projects that are approved for operation include installation schedules. These schedules provide the timing for preparation by the Department of detailed construction plans, designs, and specifications for specific flood prevention and water management structures and other works of improvement that are to be installed.

The local sponsoring organizations are required to arrange for the installation of measures on other than Federal lands. The work is generally done by local contractors under competitive bidding procedures. Federal agencies arrange for work to be done on lands which they administer. Payment for the Federal share of the cost of installing works of improvement would be made to the cooperating local organization in most cases as the work progresses although advance payments are authorized. The Department would provide necessary engineering supervision over construction either directly or by the advancement of funds to the local organization for the employment of engineering services.

Technical assistance would be provided to accelerate farm and ranch conservation planning and application of conservation practices in accordance with the schedules included in the watershed work plans of approved projects.

(3) An increase of \$1,500,000 to provide funds for loan to local organizations to finance the local share of costs of carrying out works of improvement.

Need for Increase: Section 8 of Public Law 1018, 84th Congress, which amended the Watershed Protection and Flood Prevention Act (Public Law 566), authorizes the Secretary to make loans to local organizations to enable them to finance their share of the cost of carrying out works of improvement authorized by the Act. The budget estimate for Watershed Protection would provide funds for the installation of works of improvement in 163 projects during the 1958 fiscal year. In some cases cooperating local organizations in these projects would be prevented from proceeding with planned installation of measures by lack of immediately available funds to finance their share of the cost of the work. This could seriously disrupt orderly program operations and cause confusion and wasted effort. Appropriate and timely loans would facilitate

coordination of the cooperative flood prevention and water management activities of the Department and the local organizations.

It is estimated that about 25 requests for loans would be made during the 1958 fiscal year by cooperating local organizations. The increase would provide the funds for these loans and for related administrative expenses.

Plan of Work: Responsibility for administering the loan program authorized by Public Law 1018 has been assigned to the Farmers Home Administration. Loans to local organizations would be subject to general credit policies established by the Department. No loans would be made under this authority until the Administrator of the Soil Conservation Service and the local organization have agreed on a plan for works of improvement and, if required, the plan has been approved by the appropriate committees of the Congress. Guidelines and methods would be established for determining the propriety, timing, and priority of loans in order to assure proper coordination of the construction and loan activities under this program.

(4) An increase of \$404,000 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (new language underscored):

For expenses necessary * * *: Provided, That not to exceed \$100,000 may be used for employment pursuant to the second sentence of section 706(a) of the Organic Act of 1944 (5 U.S.C. 574), as amended by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a).

The change in language would authorize the employment of experts, consultants, and advisers, or organizations, by contract and on a temporary basis, at rates not to exceed the per diem equivalent of the highest rate payable under the Classification Act. Not more than \$100,000 could be used for such employment in any one fiscal year.

A need has developed in the Watershed Protection Program for hiring experts, consultants, engineering firms or organizations or similar types of professional organizations, to furnish consultation and advice or assist in the many technical phases of watershed planning and works of improvement. The proposed language would permit the Department to secure such services.

STATUS OF PROGRAM

Current Activities:

The Watershed Protection and Flood Prevention Act, as amended, provides for cooperation between the Federal Government and the States and their political subdivisions in a program to prevent erosion, floodwater, and sediment damages in the watersheds of rivers and streams and to further the conservation, development, utilization, and disposal of water. The work of the Department under this item consists of the following:

1. Investigations and surveys of proposed small watershed projects upon application of local sponsoring organizations and collaboration in preparation of project work plans. These plans outline the proposed works of improvement to be installed and include the estimated costs, a cost-benefit analysis, cost-sharing and maintenance arrangements, a proposed schedule of operations, and other facts needed to determine whether Federal participation in the cooperative project should be approved.
2. Participation in the installation of works of improvement. Detailed construction plans and specifications are prepared for specific flood prevention and water management features of the project. The Federal Government bears all of the construction cost of the flood prevention works and related features. Funds are provided to local organizations for the Federal share of the cost of contracts they let for installation of works of improvement on other than Federal lands. The Federal agencies do this work on Federal lands which they administer with appropriate contributions being made by the local people who receive benefits. Engineering supervision over construction work is provided either directly by the Federal Government or by advancement of funds to local organizations for employment of engineers. Technical assistance is provided to accelerate the planning and application of land treatment measures in the watersheds to prevent erosion and protect the structural work of improvement from flood and sediment damage.
3. Installation of improvement measures on 58 "pilot" watersheds throughout the country. These are serving as demonstrations of the effectiveness of complete watershed treatment in preventing erosion and reducing floodwater and sediment damage.
4. Program evaluation studies to determine the effectiveness of measures applied in watershed protection projects.
5. Surveys and investigations of the watersheds of rivers and other waterways in cooperation with other Federal, State and local agencies, as the basis for the development of coordinated inter-agency programs.

6. The making of loans to local organizations to finance the local share of the costs of carrying out works of improvement for flood prevention and for the conservation, development, utilization, and disposal of water.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department authorized under the Watershed Protection and Flood Prevention Act and for the formulation of guiding principles and procedures. The Soil Conservation Service and the Forest Service assist local organizations with the planning and application of land treatment measures and the installation of works of improvement on non-Federal land in the authorized watersheds. The Forest Service is concerned with (a) all national forest and other lands in the authorized watershed that are administered by the Forest Service, (b) all range land in or adjacent to national forests and used in conjunction with such forests under formal agreement with the landowners, and (c) certain specialized technical assistance on other forest lands in the watersheds. The Bureau of Land Management and the Bureau of Indian Affairs participate in the planning and installation of works of improvement on lands under their jurisdiction. The Agricultural Research Service assists with the economic evaluation of work plans and measures installed in small watershed projects. It also makes economic analyses of river basin resource development proposals.

The Farmers Home Administration has responsibility for administration of Section 8 of the Act relating to loans to local organizations. Funds are made available from this appropriation to the U. S. Weather Bureau and the U.S. Geological Survey to provide precipitation and runoff data needed in watershed program evaluation, planning and design work.

Examples of Recent Progress:

INVESTIGATIONS AND PLANNING

Agency Participation

Allocations of funds to the cooperating agencies for 1956 and 1957 and proposed for 1958 for investigations and planning watershed protection projects are as follows:

Agency	1956 Obligations	1957 Estimate	1958 Estimate
Soil Conservation Service	\$3,016,136	\$3,964,561	\$4,148,300
Forest Service	214,025	385,349	409,700
Agricultural Research Service	84,778	105,000	113,000
Total	3,314,939	4,454,910	4,671,000

Progress in the Development of Watershed Work Plans

There has been a rapid and steady increase in interest in small watershed projects since approval of the Watershed Protection and Flood Prevention Act (Public Law 566) on August 4, 1954. At the close of the 1956 fiscal year, 545 applications from 46 States had been received by the Administrator for assistance in developing watershed work plans. During the 1956 fiscal year 104 applications were approved for work plan development. This brings the total to 172 watersheds approved for planning in 45 States as of June 30, 1956. At that time forty work plan parties had been assigned to assist the local sponsoring organizations in the field with the work.

The following table shows the status of project applications and planning under Public Law 566 as of June 30, 1956, and estimates for 1957 and 1958:

Item	Fiscal Year			
	1955	1956	1957	1958
Applications for watershed projects:				
Received current year	353	194	200	200
Cumulative total	353	547	747	947
Watersheds approved for planning	68	172	291	421
Watershed work plans prepared and pending final approval	--	32	136	266
Watersheds approved for installation of works of improvement	--	13	83	163
Planning suspended	--	10	15	20
Planning in process	68	130	140	135
Balance:				
To be planned	--	175	154	122
Not suitable for development of plans :	--	200	302	404

State Laws Amended

The Watershed Protection and Flood Prevention Act places primary responsibility for projects under the Act at the State and local levels. In order to authorize acceptance of this local responsibility, several States have enacted amendments to soil conservation districts enabling legislation so that the authority of the districts to act as "local organizations" is expressly defined. During the 1955 and 1956 sessions of their legislatures, 25 States passed new or amendatory legislation to facilitate cooperation between State and local agencies and the Secretary of Agriculture in activities authorized by the Watershed Protection and Flood Prevention Act. In all, 45 different laws were passed in the 25 States.

Soil conservation districts in 44 States have authority to act as "local organizations" as that term is used in Public Law 566. The legislatures of six States have passed laws providing for the creation of sub-districts of soil conservation districts to cooperate with the Secretary of Agriculture. The legislatures of five States have provided for State financial participation in watershed project development.

Economics Guide Developed

An Economics Guide has been prepared and distributed to the planning personnel and other field employees for testing, review and comment. It will be revised and issued in final form after it has been tested under a wide variety of conditions. In the meantime it is being used in economic evaluation studies of proposed watershed projects and in the preparation of the project justifications. Adoption and use of the procedures in the guide will result in uniformity in the preparation of economic data, in more factual criteria on which project justification may be based, as well as facilitate review of the work plans.

INSTALLATION OF WORKS OF IMPROVEMENT

Agency Participation

Allocation of funds to the cooperating agencies of the Department for 1956 and 1957 and proposed for 1958 for works of improvement on watershed protection projects is as follows:

	1956	1957	1958
	Obligations	Estimate	Estimate
Soil Conservation Service			
Pilot Watersheds	\$7,205,876	\$7,944,172	\$4,833,914
P. L. 566 watersheds	10,708	5,120,521	14,030,600
Forest Service			
Pilot Watersheds	345,225	464,633	304,086
P. L. 566 Watersheds	5,630	51,020	121,400
Recovery of prior year obligations	-320	- -	- -
Total	7,567,119	13,580,346	19,290,000

Operations Begin on New Watershed Projects

During the last month of the 1956 fiscal year approval was given to initiate operations on 13 new watershed projects for which work plans had been prepared under authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress). It is estimated that approval will be given to begin installation of watershed works of improvement on an additional 70 projects during the fiscal year 1957. There would thus be 83 Public Law 566 projects sponsored by local organizations underway by June 30, 1957, and receiving financial and technical assistance from the Federal Government under the Watershed Protection program. In addition, it is anticipated that 80 additional projects will be undertaken in 1958. The Federal Government's commitments for these projects are estimated as follows:

Explanation	Fiscal Year					
	1956 Actual		1957 Estimate		1958 Estimate	
	No.:	Amount	No.:	Amount	No.:	Amount
Projects continued from prior years and estimated cost of completion at beginning of year	: 0-	: -0-	: 13:	\$10,970,662	: 83:	\$62,920,662
Projects initiated during the year and estimated cost of completion	: 13:	10,987,000	: 70:	57,120,000	: 80:	65,280,000
Total approved projects and estimated cost of completion	: 13:	10,987,000	: 83:	68,091,662	: 163:	128,200,662
Deduct:						
Amounts obligated during year for works of improvement on:						
(a) Projects initiated during the year	: xx:	16,338	: xx:	3,871,000	: xx:	5,689,000
(b) Other projects	: xx:	-0-	: xx:	1,300,000	: xx:	8,463,000
Total	: xx:	16,338	: xx:	5,171,000	: xx:	14,152,000
Total projects in progress at end of year and estimated cost of completion	: 13:	10,970,662	: 83:	62,920,662	: 163:	114,048,662

Current Plans for Pilot Watershed Projects

The original cost estimates and schedule of work for the pilot watershed projects were based on preliminary project investigations. Many changes in watershed conditions have taken place since the original surveys were made. Also, more detailed investigations revealed cases of unfavorable cost-benefit ratios, unsuitable foundation conditions at proposed structural sites, and inability of local interests to furnish easements and rights-of way. It is now estimated that a period of about 8 years (1954-1961) will be required to complete all phases of the pilot watershed program. The total Federal cost of the presently planned improvement measures is now estimated to be about \$34,428,000. The Federal Government's remaining commitments for these pilot watershed projects are estimated as follows:

Explanation	Fiscal Year					
	1956 Actual		1957 Estimate		1958 Estimate	
	No.:	Amount	No.:	Amount	No.:	Amount
Approved projects and estimated:	:	:	:	:	:	:
cost of completion at	:	:	:	:	:	:
beginning of year	58:	\$25,180,927	58:	\$17,630,146	57:	\$9,164,000
Deduct:	:	:	:	:	:	:
Discontinued projects and	:	:	:	:	:	:
estimated cost of com-	:	:	:	:	:	:
pletion	:	-0-	1:	57,341	:	-0-
Amounts obligated during	:	:	:	:	:	:
year for:	:	:	:	:	:	:
(a) Projects completed	:	:	:	:	:	:
during the year	:	-0-	:	-0-	33:	1,361,000
(b) Other projects	xx:	7,550,781	xx:	8,408,805	xx:	3,776,000
Total Projects in progress	:	:	:	:	:	:
at end of year and esti-	:	:	:	:	:	:
mated cost of completion	58:	17,630,146	57:	9,164,000	24:	4,026,000

Watershed Improvement Measures in Pilot Watersheds

The following tables show the progress in completing soil surveys and conservation plans on the farms and the major watershed improvement measures planned and installed cooperatively by the Department and local cooperators in the pilot watersheds. Structural and land stabilization measures are being installed primarily by local contractors. The Service is also providing additional technical assistance to farmers and ranchers in planning and establishing soil and water conservation practices and sound land use. The purpose is to accelerate the application of land treatment measures which contribute to flood prevention and thus provide necessary protection to structural and other works of improvement installed primarily for flood prevention.

Soil Surveys and Farm Conservation Plans:

Item	Totals in Project Area		1956 (Actual)
	(Including "Conservation		With Watershed
	Operations") Cumulative		Protection
	June 30, 1956		Funds
Soil surveys (Acres)	2,105,986		76,150
Total number cooperators	10,039		1,569
Basic conservation plans:			
Number	6,785		1,227
Acres	1,169,248		172,892

Works of Improvement:

Measure	1956 Accomplishments (Actual)			Total
	Units:	With Watershed	With Conservation	On the land
		Protection Funds:	Operations Funds:	to 6/30/56
<u>Land Treatment Measures:</u>				
Contour farming	Acres:	14,176	3,972	125,697
Cover cropping	Acres:	9,921	21,080	57,625
Crop residue utilization	Acres:	18,270	13,786	197,137
Strip cropping	Acres:	3,327	2,011	21,338
Pasture planting	Acres:	10,376	8,358	73,533
Revegetation	Acres:	1,300	71	5,083
Range improvement	Acres:	13,885	24,747	80,564
Terraces	Miles:	720	326	7,562
Diversions	Miles:	43	38	565
Pond construction	No. :	131	171	2,283
Waterway development ...	Acres:	690	536	7,369
Tree planting	Acres:	2,791	420	7,819
Woodland protection	Acres:	2,996	1,341	14,717
Wildlife area improve- ment	Acres:	301	29	1,064
Erosion control struct- ures	No. :	56	1,173	4,327
Contour furrowing	Acres:	837	- -	2,298
Stock trails and drive- ways	Miles:	11.8	- -	30.6
Water developments	No. :	22	- -	44
Forest fire protection .	Acres:	121,080	- -	201,757
Fencing for grazing control	Miles:	48	- -	164.1

Works of Improvement: (Continued)

Measure	1956 Accomplishments (Actual)			
	Units:	With Watershed	With Conservation	on the Land
		Protection Funds	Operation Funds	to 6/30/56
Structural and Land	:	:	:	:
Stabilization Measures:	:	:	:	:
Floodwater-retarding	:	:	:	:
structures	(: No. :	70	- -	137
	(:Ac.Ft:	33,850	- -	69,835
Stabilization and	:	:	:	:
sediment control:	:	:	:	:
(a) Structures	: No. :	252	- -	1,266
(b) Silt and debris	:	:	:	:
basins	: No. :	56	- -	152
Subwatershed waterway	:	:	:	:
improvement:	:	:	:	:
(a) Outlet construc-	:	:	:	:
tion	:Miles:	11	- -	43
Stream Channel improve-	:	:	:	:
ment:	:	:	:	:
(a) Channel stabiliz-	:	:	:	:
ation	:Miles:	11	- -	24
(b) Channel improve-	:	:	:	:
ment	:Miles:	29.6	- -	81
Diversion ditches and	:	:	:	:
dikes	:Miles:	0.6	- -	10
Stabilization of critical:	:	:	:	:
areas:	:	:	:	:
(a) Roadside erosion	:	:	:	:
control	:Miles:	91.3	- -	224
(b) Revegetation:	:	:	:	:
1. Grasses and	:	:	:	:
legumes	:Acres:	4,306	- -	8,655
2. Woody plants ..	:Acres:	2,270	- -	4,278
(c) Special purpose	:	:	:	:
terraces	:Acres:	507	- -	1,941
(d) Stabilization of	:	:	:	:
logging roads ..	:Miles:	1.6	- -	3.8

The estimated value of easements and rights-of-way provided by local organizations for the major structures that have been installed or are under contract in the pilot watersheds is about \$1,000,000.

Program Evaluation Studies

Studies initiated in the pilot watersheds to determine the effects of the watershed treatment have continued and in a few cases have been revised to provide better information. Most of the instrumentation work and maintenance of the rain gage and streamflow stations is being done by the U. S. Weather Bureau and the U. S. Geological Survey with funds provided from this appropriation.

The period of study has been too short to be conclusive as to the total benefits accruing as a result of the applied measures. Special storm reports show that measures applied to date are functioning effectively. Structural measures tested under storm and flood conditions have reduced peak flows and flood damage as planned.

Hydrologic Work Facilitated

A special study project has been initiated in the flat-woods area of Georgia to provide additional hydrologic data that will be useful in the planning, design, and installation of watershed measures under Public Law 566.

The Service has prepared in tentative form a Hydrology Guide For Use in Watershed Planning, and has completed the field-testing of the recommended procedures contained in this document. Final revision of the document is now nearing completion and will materially increase the effectiveness of newly employed hydrologists.

The Service has also made considerable progress in providing additional hydrologic data to field personnel through cooperative agreements with the U. S. Weather Bureau and the U. S. Geological Survey, with the Agricultural Research Service providing consulting assistance. Streamflow records from watersheds of less than 400 square miles have been supplied to a number of States by the U. S. Geological Survey. A study of storm characteristics now underway by the Weather Bureau has resulted in the preparation and distribution of one technical publication. Other publications that will provide hydrologic data are in process. The Soil Conservation Service has also completed two technical papers that will facilitate the Service's hydrologic work.

Geologic Data Developed

Increased activities in the construction field have greatly increased the demand for fundamental research and collection of basic data needed for the design of sediment pools in floodwater retarding structures. Service geologists are conferring regularly with representatives of the Agricultural Research Service to acquaint them with the fundamental research needs in the sedimentation field. One of the perplexing problems confronting Service

geologists in the development of sediment design data for floodwater retarding structures involves the prediction of the amount of incoming sediment that will be trapped by the structure. The Service initiated a cooperative project with the U. S. Geological Survey to collect information on trap efficiency of structures. Measurements of the sediment outflow from structures are being made by that agency at the present time on 11 different floodwater retarding structures in the country.

The Service has continued cooperation with other Federal agencies with respect to collection, analysis, and interchange of sedimentation data through participation on the Subcommittee on Sedimentation, President's Inter-Agency Committee on Water Resources. During the past year the Department participated in the following inter-agency projects: (a) preparation of a joint hydrology-sedimentation annotated bibliography; (b) development of a densitometer for measuring specific weight of deposited sediment; and (c) development of a device for automatic measurement and recording of sediment load of streams.

Beneficial Effects of Works of Improvement

Green Creek Pilot Watershed, Texas

During the period from April 29 to May 1, 1956, the weighted rainfall for the entire 105 square mile Green Creek watershed in Texas was 9.49 inches. At the time of this storm, seven floodwater retarding structures had been completed and one was under construction. Approximately 60 percent of the land-treatment measures had been applied. The partially completed structure functioned to the limit of its capacity without damage to the structure. The total storm runoff water detained by the eight structures was 6,800 acre feet.

Records for the area indicate that rainfall of this intensity for a single storm is likely to occur only once in 50 years whereas the improvements were designed for a 25 year frequency storm. The total damage to both upland and bottom land in the Green Creek watershed was about \$151,000. However, if the structures and land-treatment measures had not been in operation, it is estimated that the damage would have exceeded \$225,000. The partially completed program reduced damages approximately 33 percent. The completed program would have reduced damages by about 39.5 percent.

Pleasant Creek Pilot Watershed, Utah

The Pleasant Creek pilot watershed at Mt. Pleasant, Utah, when only in its initial phases of construction was subjected to a severe flood-producing storm on August 16, 1955. The storm hit both treated and untreated areas with high intensity rainfall over an area of about 4 square miles. Mud and rock flows severely eroded the watershed channels and carried large quantities of soil and rock ranging up to 4 feet in diameter. Flood spreading structures constructed near the mouth of the canyon split the debris flow and caused it to drop most of its load in front of the structures and upstream from the structures. The effectiveness of the structures installed can be determined from the reduction in peak flow of the floodwaters which was reduced from more than 2000 cubic feet per second to less than 500 cubic feet per second. There was

practically no runoff from the 200 acres which had been treated by seeding and terracing in the high mountains. North Creek, which is adjacent to Pleasant Creek and which was untreated, erupted mud, rock and debris which inundated and damaged 110 acres of crops and farm land as well as causing considerable damage to irrigation systems. In contrast Pleasant Creek which has a much larger area had only slight damage as compared with floods from similar storms in the past.

Walnut Creek Pilot Watershed, California

During December, 1955, the wettest in 75 or more years, 8 inches of rain fell in 48 hours on the Walnut Creek Watershed, in California. A newly completed detention dam in Pine Creek, a tributary of Walnut Creek, handled all the runoff from that watershed and released the floodwater in such manner that there was little flooding and no property damage as far as five miles down stream. In 1951, prior to the installation of watershed improvement measures a similar storm caused floodwater to rise from six inches to as high as three feet above the floors of 150 homes in the city of Walnut Creek.

In Lafayette Creek, another tributary of the Walnut Creek Watershed, a channel that had been improved with a concrete lining carried runoff from 10 inches of rainfall that fell in 48 hours, and there was no property damage. Unprotected stream channels, overflowed and caused considerable property damage.

Status of Work on Individual Watershed Protection

The following statements for each of the watersheds show the status of the project, significant accomplishments, and some of the major flood prevention measures planned for installation by the Department and local cooperators. Also shown is the total estimated Federal cost and total obligations through June 30, 1956, for all projects including those pilot watershed projects for which authorizations have been cancelled. Project cost estimates may be revised as more detailed information is available regarding local participation, structural site conditions, changing economic conditions etc.

The estimated Federal costs of the Public Law 566 projects do not include the increased flood prevention Federal costs required by the amended law (Public Law 1018 84th Congress). Negotiations are currently under way with the local sponsors to revise the work plans in accordance with the cost sharing and other provisions of the law.

ARIZONA

White Tanks Pilot Watershed

Total Estimated Federal Cost	\$ 219,000
Total Obligations through June 30, 1956	213,506

All construction work on this project was completed in July 1954. Works of improvement primarily for flood prevention consisted of 2 earth-fill flood-water-retarding structures (2,655 and 1,026 acre feet), 6 debris and desilting basins, and 11 miles of diversion dikes and ditches. All planned land treatment measures which contribute to flood prevention have been applied by the sponsors. The local people paid \$215,537 and the Federal Government \$192,088 of the total installation costs on this project. Evaluation studies of the effectiveness of the land treatment measures and works of improvement installed are continuing.

Squaw Peak - South Mountain Pilot Watershed

This project has not been authorized because no qualified local agency was willing to sponsor it.

ARKANSAS

Six Mile Creek Pilot Watershed

Total Estimated Federal Cost	\$ 2,095,000
Total Obligations through June 30, 1956	1,616,299

As of June 30, 1956, 23 of the 26 floodwater retarding structures planned for this watershed had reached the contract stage. Contracts had also been awarded on 12.4 miles of the 23 miles of planned channel improvement. Sixteen of the detention structures are essentially completed and 7 are now under construction. Three floodwater-retarding structures and some 10 miles of channel improvement work remain to be completed pending clearance of easements by the sponsoring agencies. The Forest Service has planted 220 acres of severely eroded areas to pine seedlings. Overall, the installation of structural works of improvement is estimated to be about 60 percent complete.

Some 840 or about 85 percent of the 1,039 land owners in the watershed have developed conservation farm plans for their lands. These soil conservation district cooperators have applied approximately 75 percent of the needed land treatment measures. It is expected that the farm planning activity will be essentially complete by January 1, 1957 and that the installation of land treatment measures will proceed on schedule.

Some 225 land owners have donated easements and rights-of-way to promote installation of the works of improvement at an estimated value of \$65,000. In addition, utility companies and counties have agreed to relocate existing lines and roads at an estimated cost of some \$15,000.

Field surveys are in progress on a detailed economic evaluation program in the watershed. The Agricultural Research Service is cooperating in this economic evaluation to determine the benefits from installing works of improvement. In cooperation with the U. S. Geological Survey, intensive instrumentation studies are being made to measure the effectiveness of the program as well as to provide information for future planning work.

Adobe Creek Pilot Watershed

Total Obligations through June 30, 1956 \$ 50,740

Authorization for this project was withdrawn effective April 1, 1955, at the request of the sponsors.

Arroyo Grande Creek Watershed (P.L. 566)

Total Estimated Federal Cost \$ 104,100

Total Obligation through June 30, 1956 None

This watershed covers an area of approximately 103,400 acres in San Luis Obispo County, California. Approximately 10 percent of the watershed is cropland; 28 percent is grassland; 17 percent is woodland; 41 percent is brushland; and 5 percent miscellaneous, such as towns, roads, etc.

The major works of improvement planned for this watershed consist of 3.43 miles of stream channel improvement, sand dune stabilization along a 900 foot channel reach and intensification of installation of fire protection measures.

Land treatment measures will be installed, operated and maintained by the landowners or operators of the farms on which the measures are installed. The channel improvement and sand dune stabilization work will be contracted for and upon completion, maintained by the Arroyo Grande Soil Conservation District and the San Luis Obispo Flood Control District, the local sponsoring organizations.

Calleguas Creek Pilot Watershed

Total Estimated Federal Cost \$ 1,561,000

Total Obligations through June 30, 1956 1,077,075

The Calleguas Creek Pilot Watershed includes an area of 215,775 acres. Of the 1443 farms in the watershed, farm plans have been prepared for 659 farms totaling 126,973 acres.

As of June 30, 1956, major structural measures installed include 46 debris basins and channel grade stabilization structures, 8 miles of stream bank stabilization, 5.7 miles of channel capacity improvement, and 1 mile of diversion ditches. Under contract but not completed as of June 30, 1956, were 28 debris basins and channel grade stabilizers, 7.6 miles of stream bank stabilization, 3.8 miles of channel capacity improvement, 0.23 mile of diversion ditches, and 0.05 mile of lined channels. These measures represent 40 percent of planned debris basins and channel grade stabilizers, 48 percent of stream bank protection, 27 percent of channel capacity improvement, 1 percent of lined channels, and 7 percent of planned diversion ditches.

Structural measures installed and under contract total \$1,198,000. In addition, 141 property owners had contributed 210 acres of rights-of-way with an estimated value of \$84,000.

Land treatment practices installed as of June 30, 1956, included 77 miles of diversion ditches, 116 miles of terraces, 69 outlet structures, 79 dams, 1.26 miles of channel lining, 12 miles of channel improvement, 682 acres of contour planted orchard, 300 acres of contour farming, 35,000 acres of proper grazing, 6,954 acres of range seeding, 510 acres of pasture seeding, 9 stock water developments, 20,000 acres of crop residue management, 6,505 acres of cover cropping, and 3.1 miles of roadside erosion control.

Forty-seven percent of the planned land treatment measures have been installed by 350 cooperators at an estimated cost of \$665,000.

At this time, local organizations, working with the Forest Service through the State Division of Forestry are purchasing additional fire-fighting equipment valued at \$25,000. This purchase represents approximately 55 percent of the planned improved fire-fighting equipment.

Walnut Creek Pilot Watershed

Total Estimated Federal Cost	\$ 2,316,000
Total Obligations through June 30, 1956	952,751

As of June 30, 1956, one floodwater retention dam, 4 miles of streambank and channel stabilization and 6 drop structures had been completed. Channel capacity improvement, survey and designing completed on three additional drop spillway structures and 3,087 lineal feet of concrete channel lining.

Private interests donated some \$7,000 for covering the channel lining for a distance of 286 lineal feet.

There are 485 farmers and ranchers in the 95,600 acre watershed. These farms and ranches cover approximately 75 percent of the watershed. The majority of the private properties are cooperators of the Contra Costa Soil Conservation District, and have installed conservation practices on their land in varying degrees up to nearly 100 percent of the practices recommended.

Field engineering, easements, rights-of-way and maintenance valued at \$70,000 have been furnished by the local county flood control and water conservation district. Additional easements and rights-of-way have been furnished by Contra Costa County in the amount of \$4,320.

COLORADO

Kiowa Creek Pilot Watershed

Total Estimated Federal Cost	\$ 800,000
Total Obligations through June 30, 1956	295,253

As of June 30, 1956, lands under district cooperative agreement totaled 62,900 acres, or 83 percent of the lands in the watershed. Of these, 36,250 acres were covered by basic plans, which is 48 percent of the watershed. About 40 percent of the needed farm and ranch conservation measures had been applied, which is in proportion to progress of structural measures.

As of June 30, 1956 sponsor contributions to the structural program have been on schedule, totaling about \$34,000, which included construction of one floodwater retarding structure and two sediment control structures.

During the year, two total sediment load stations have been installed by the U. S. Geological Survey and the entire evaluation program is proceeding according to schedule. In May, the Forest Service assigned a forester to the project.

DELAWARE

Bear Hole Watershed (P.L. 566)

Total Estimated Federal Cost	\$ 122,527
Total Obligation through June 30, 1956	2,972

This watershed covers an area of approximately 4,523 acres in Sussex County, Delaware. Approximately 56 percent of the watershed is cropland; 4 percent is grassland; 36 percent is woodland and 4 percent is miscellaneous, such as towns, roads, etc.

The major works of improvement planned for this watershed consist of 64 erosion control drop structures and 19 miles of stream channel improvement. The structural measures will be operated and maintained by the Bear Hole Tax Ditch Funds.

FLORIDA

Lake Placid East Chain of Lakes Watershed (P.L. 566)

Total Estimated Federal Cost	\$ 14,677
Total Obligation through June 30, 1956	None

The watershed work plan covers an area of approximately 12,500 acres in Highlands County, Florida. Approximately 20 percent of the watershed is cropland; 53 percent is grassland; 6 percent is woodland; 16 percent is water surface of lakes and 5 percent miscellaneous, such as towns, roads, etc.

The major works of improvement planned for this watershed consist of 2 check dams, 2 drop spillways, 1 drop inlet, 23,850 feet of ditch construction and 2,550 feet of channel improvement. The water flow control measures will confine inundation to allowable limits on the low lying areas adjacent to the lakes. The check dams will serve as lake stage control structures.

The structures will perform and function without manual operation or adjustment and will be maintained by the Highlands Soil Conservation District and the Watershed Associations.

Land treatment measures to be installed include cover croppings, pasture planting and open drains.

GEORGIA

Bear Creek Watershed (P.L. 566)

Total Estimated Federal Cost	\$ 75,590
Total Obligation through June 30, 1956	767

This watershed covers an area of approximately 23,000 acres in Newton and Jasper Counties, Georgia. Approximately 33 percent of the watershed is cropland; 27 percent is grassland; 38 percent is woodland and 2 percent miscellaneous such as towns, roads, etc.

The major works of improvement planned for this watershed consists of approximately 9 miles of channel improvement; 5 miles of floodwater construction; 32.2 miles of roadside erosion control and additional cooperative forest fire control on 8,273 acres of woodland. Structural measures will be operated and maintained by the Bear Creek Watershed Association.

Land treatment measures planned for installation consist of 527 miles of terraces, 520 acres of waterway development, 928 acres of pasture seeding, 1,584 acres of pasture improvement, 58 farm ponds, 859 acres of tree planting, and 1,498 acres of farm drainage. Land treatment measures will be installed and maintained by the landowners of the farms on which the measures are installed under agreement with the Upper Ocmulgee Soil Conservation District.

North Fork Broad River Pilot Watershed

Total Estimated Federal Cost	\$ 731,000
Total Obligations through June 30, 1956	348,078

As of June 30, 1956, eight of the ten floodwater retarding structures planned for this watershed had reached the construction stage. Six of these structures were complete insofar as earth work is concerned. Surveys had been completed on one more structure. Easements and rights-of-way having an estimated value of \$35,000 had been donated by 40 farmers in the watershed to permit the construction of the eight floodwater retarding structures.

The Service has assisted 265 farmers in this watershed to develop conservation farm plans on 20,468 acres of land. About 50 percent of the planned land treatment measures have been installed.

The Forest Service program in the watershed has resulted in the planting of 700,000 loblolly pine seedlings on badly eroding areas on privately-owned lands. Fifteen landowners were given woodland management assistance. Site preparation work including planting of love grass, brush dams and small diversion ditches was carried out on several areas prior to the planting of the seedlings. More than 100 land owners were contacted concerning the tree planting and technical forestry assistance program. Forest land in the watershed under forest fire protection totals 23,193 acres.

Rocky Creek Watershed (P. L. 566)

Total Estimated Federal Cost.....\$ 38,452
Total Obligation through June 30, 1956..... None

The watershed covers an area of approximately 20,700 acres in Wilkes County, Georgia. Approximately 5 percent of the watershed is cropland; 28 percent is grassland; 60 percent is woodland and 7 percent is miscellaneous such as towns, roads, etc.

The major works of improvement planned for this watershed consist of approximately 7 miles of stream channel improvement; 3.4 miles of roadside erosion control and cooperative forest fire control on the 11,424 acres of woodland. These measures will be operated and maintained by the Rocky Creek Watershed Association.

The major land treatment measures planned for this watershed are terraces, farm ponds, waterways, pasture seedings and improvement, and farm drainage. The land treatment measures will be installed, operated and maintained by the landowners of the farms on which the measures are installed under agreement with the Broad River Soil Conservation District.

IDAHO

Dry Creek Pilot Watershed

Total Estimated Federal Cost.....\$261,000
Total Obligations through June 30, 1956..... 85,452

A. Works of Improvement on Private Land

Most of the work on private land has been done in the Spring Valley branch of the Watershed. Six structures were completed in the fall of 1955. The land treatment measures scheduled are approximately 10 percent applied.

Progress in planning for the rest of the watershed has been slow for various reasons. However, a full-time technician has been assigned, and complete farm and ranch conservation planning is now in progress.

Although the structures have been installed only a short time, indications are that they are effective in not only stabilizing the channel, but raising the water table as well.

The range seedings have resulted in a marked increase in forage production, as well as increasing the ground cover for watershed protection.

B. Works of Improvement on National Forest

As of June 30, 1956, twelve miles of road surface drainage improvement, 0.8 miles of channel stabilization, and two miles of fence had been completed. In addition, 145 gully plugs, one mile of channel stabilization, 24 catchment basins, and 2,500 linear feet of contour furrows had been installed, and 800 willow cuttings had been planted to aid gully stabilization.

Hadley Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 1,180,000
Total Obligations through June 30, 1956.....\$ 298,453

Out of a total of 241 farms in the watershed over $\frac{1}{2}$ are under a basic conservation farm plan with many more in the process of being developed. Five stabilization and sediment control structures have been installed; nine were under construction and 2 additional were under contract by June 30, 1956. Thirty-five miles of terraces out of the total of 141 had been installed; 12 miles of diversions out of 13; 50 acres of waterways out of a total of 166; 1157 acres of pasture improvement out of a total of 7326 had also been completed.

The Forest Service has planted woody plantings on 52.5 acres of critical sediment producing areas, and local owners planted 36 acres of trees. All of the woodland in the watershed is under a fire protection program. Ten recording rain gages and 1 stream gage recorder have been installed in the watershed.

Money Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 243,000
Total Obligations through June 30, 1956..... 25,835

Soil conservation practices applied to date in this watershed consist mainly of contour farming and installation of terraces and grassed waterways. About $\frac{1}{2}$ of the 217 landowners in the watershed are now soil conservation district cooperators and 42 of these have basic conservation plans prepared for their farms.

It is expected that 3 sediment control structures will be installed in the watershed in the 1957 fiscal year.

Old Tom Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 298,000
Total Obligations through June 30, 1956..... 153,986

As of June 30, 1956, eight of the 40 stabilizing sediment control structures planned for this watershed had been installed, and 4 additional were under contract and being installed. Work was completed or under way on the development of designs and specifications for 8 additional structures and 3 structural sites were being surveyed. Of the 63 farms in the watershed 38 had basic conservation farm plans comprising 7,872 out of 11,525 acres in the watershed.

The land treatment program is progressing satisfactorily with 54 acres of waterways installed and 103 acres of pasture improvement. Woody plantings have been made on 20 of the 24 acres planned in the watershed.

Local farmers have installed 5 small sediment control structures without cost to the Federal Government except for technical assistance with the design and installation. In one instance the township and highway road commissioners have furnished \$2,500 for a combined road crossing and stabilization structure.

Tiskilwa Watershed (P. L. 566)

Total Estimated Federal Cost.....\$ 201,024
Total Obligation through June 30, 1956..... None

The watershed covers an area of approximately 3,300 acres in Bureau County, Illinois. Approximately 53 percent is cropland; 41 percent is grassland; 2 percent is woodland and 4 percent miscellaneous, such as towns, roads, etc.

The major works of improvement planned for this watershed consist of 4 floodwater retarding structures and 1.25 miles of stream channel improvement. These measures will be operated and maintained by the Village of Tiskilwa.

The land treatment measures for the watershed consist primarily of waterways, terraces, field diversions, pasture plantings, and tree planting. These measures will be installed, operated and maintained by the landowners of the farms on which the measures are installed under agreements with the Bureau County Soil Conservation District.

INDIANA

Flat Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 289,000
Total Obligations through June 30, 1956.....\$ 138,259

As of June 30, 1956, nine stabilization and sediment reduction structures of the fifty-two planned for this watershed had been completed. Contracts had been awarded and construction started on six others. Also, designs, plans and specifications were completed and ready for advertising for bids on 2.8 miles of waterway development.

There are 491 farms in the watershed, comprising 36,632 acres. Of this number, 206 have signed cooperative agreements with the soil conservation district and 61 of them have basic conservation plans for their farms.

The Forest Service has placed approximately 600 acres of woodland under protection and has planted trees on 135 acres of critical sediment producing area and 389 acres of other plantings.

IOWA

Flcvi River Tributaries Pilot Watershed

Total Estimated Federal Cost.....\$ 44,000
Total Obligation through June 30, 1956..... 20,531

At the close of the 1956 fiscal year basic conservation plans had been prepared for 23 district cooperators out of a total of 31 cooperators in the watershed. Conservation practices applied to the land include 4,346 acres of contouring, 2,600 rods of contour fencing, 17.6 acres of waterway development, 22,170 lineal feet of tile drains, and 37.2 miles of level terraces. There are no major structural measures planned for this watershed.

Harmony Creek Watershed (P. L. 566)

Total Estimated Federal Cost.....	\$ 91,530
Total Obligation through June 30, 1956.....	\$ 1,958

This watershed covers an area of approximately 3,100 acres in Harrison County, Iowa. Approximately 86 percent of the watershed is cropland; 11 percent is grassland and 3 percent is miscellaneous, such as towns, roads, etc.

Structural measures planned for this watershed consists of 5 grade control structures and 1 grade stabilization structure. These structures will be maintained by the Harrison County Soil Conservation District.

Land treatment measures needed include contour cultivation, terraces, and farm waterways. These measures will be installed, operated and maintained by the local landowners.

Honey Creek Pilot Watershed

Total Estimated Federal Cost.....	\$ 244,000
Total Obligations through June 30, 1956.....	\$ 195,564

As of June 30, 1956, sixteen dual purpose floodwater retarding and stabilization structures had been constructed and contracts had been awarded on three additional structures, out of the twenty-four planned for this watershed. Three stabilizing structures were being constructed by the county of which two had been completed. All of the land for the dual purpose structures was donated by the landowners as well as the removing and building of necessary fences and the fertilizing and seeding of all dams, outlets, and waterways. The two remaining structures had been delayed because the necessary easements had not been furnished by the local people.

Lucas County has completed four miles of road grading and 5.9 miles of roadside seeding as a part of the planned improvements in the watershed, however, due to the drought some of the seeding was not successful.

Of the 75 farmers whose land lies in the watershed, over 90 percent have basic conservation plans for their farms. Despite three dry years when many seedings have failed, over 50 percent of the watershed is in permanent pasture. Conservation accomplishments since 1953 include 5,029 acres of improved land use, 16.9 miles of level terraces, 3.1 miles of diversion terraces, 6.3 miles of terrace outlet construction, and 76 acres of waterways.

Mule Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 459,000
Total Obligations through June 30, 1956 427,095

As of June 30, 1956, contracts had been awarded for all twenty-four of the structures planned for this watershed. Nineteen dual purpose stabilizing and sediment control drop inlet structures and one chute structure had been completed. The remaining four structures were still under construction. Easements and rights-of-way having an estimated value of \$25,000 were contributed by the land owners to permit installation of the structural improvements.

There are 61 farm units in this watershed of 8,013 acres, all of which have conservation farm plans, and about 58 percent of the planned land treatment measures have been installed. As an example, out of 281 miles of terraces planned in the watershed, local farmers have already installed 185 miles.

KANSAS

Aiken Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 112,000
Total Obligations through June 30, 1956.....\$ 104,155

Only one floodwater retarding structure was planned for this watershed and was installed in the fall of 1954. In connection with the installation of this structure it was necessary for the county to relocate a county road. One farm house in the area of the reservoir pool was moved by the local people with their own equipment to higher ground, requiring 69 man days of labor. In the spring of 1955, two heavy rains fell over the watershed area only two days apart. The flood pool behind the reservoir raised 8 feet as a result of these storms, and no flood damage was reported in the watershed area.

The application of land treatment measures in the watershed have been considerably retarded because of continued drought conditions in the area. Because of this many of the landowners and operators have found it necessary to seek part time work off the farm to supplement their income.

Bill's Creek Pilot Watershed

Total Obligations through June 30, 1956.....\$ 20,973

Authorization for this project was withdrawn at the request of the sponsors effective July 1, 1954.

Cimarron Watershed (P.L. 566)

Total Estimated Federal Cost.....\$ 68,604
Total Obligation through June 30, 1956..... None

The watershed covers an area of 6,440 acres in Wray County, Kansas. Approximately 65 percent of the area is cropland; 28 percent is grassland; 7 percent miscellaneous, such as municipal, roads, etc.

The major works of improvement for this watershed consist of 4 floodwater retarding structures and 12 acres of floodways. The sponsoring agencies for this watershed are the Gray County and Cimarron Watershed District. The 4 floodwater retarding structures and the 4 floodways will be operated and maintained by the Cimarron Watershed District.

Land treatment measures to be installed consist primarily of 31 miles of terraces, 11 acres of vegetated terrace outlets, 464 acres of pasture seeding, and 745 acres of pasture furrows. These measures will be installed, operated and maintained by the local landowners.

Little Delaware-Mission Pilot Watershed

Total Estimated Federal Cost.....\$ 548,000
Total Obligations through June 30, 1956.....\$ 329,124

The primary structural improvements planned for this watershed include 8 floodwater retarding structures and 22 grade stabilization structures. Four of the floodwater retarding and 8 of the grade stabilization structures have been completed. One additional floodwater retarding structure and six grade stabilization structures are under construction.

Conservation farm plans have been developed on 92 percent of the agricultural land in the watershed and about 68 percent of the planned land treatment measures have been applied to the land. The Forest Service has furnished technical assistance to the district cooperators in the application of forestry practices in the watershed.

Easements and rights-of-way having an estimated value of \$19,260 have been donated to date by approximately 26 landowners to permit the construction of the floodwater retarding structures planned for the watershed.

Lost Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 201,000
Total Obligations through June 30, 1956.....\$ 60,526

As of June 30, 1956, one of the three floodwater retarding structures planned for this watershed had been constructed. Construction of the second floodwater retarding structure was scheduled to begin early in the current fiscal year and the final one will be under contract before the end of the year.

There are 29 farmers in the watershed area involving approximately 8,000 acres of land (70 percent of the land in the watershed) who have developed conservation farm plans for their farms. About 20 percent of the planned land treatment measures have been installed. Poor crop yields in the watershed the last two years has slowed the application of conservation measures. About 35 percent of the waterways planned have been seeded with grass but drought conditions has prevented the establishment of adequate cover.

Snipe Creek Pilot Watershed

Total Estimated Federal Cost \$ 131,000
Total Obligations through June 30, 1956 \$ 132,647

Six of the nine floodwater retarding structures planned for Snipe Creek are now constructed. Easements and rights-of-way have been donated by 14 land owners, the township board of 2 townships and one from the board of county commissioners. Also, an agreement has been secured from the Kansas State Highway Department allowing for a part of one structure to be built on the right-of-way. The Kansas Power and Light Company relocated at their own expense about 1,000 feet of natural gas line in order that one structure could be built. The estimated value of the property involved in the easement and rights-of-way is about \$9,400. Surveys have been made and instruments installed to assist in the evaluation of the effectiveness of the conservation measures installed. Further program evaluation studies are being made in cooperation with the Economic Department of Kansas State College.

There are 105 farms in the watershed of which 90 have basic conservation farm plans. Approximately 80 percent of the planned land treatment measures are now on the land. The Forest Service provided technical help in the establishment of the forestry phases of the land treatment program in the watershed.

Switzler Creek Pilot Watershed

Total Estimated Federal Cost..... \$ 320,000
Total Obligations through June 30, 1956..... \$ 104,285

As of June 30, 1956 two of the five planned floodwater retarding structures were completed. All field surveys have been completed on the remaining three structures. Construction is scheduled as soon as the local people have furnished the necessary easements. Rain gages and stream gage instruments have been installed to provide rainfall-runoff information for program evaluation studies.

About 50 percent of the farms have basic conservation farm plans and much of the land treatment practices specified in the plans have been applied.

KENTUCKY

North Fork Rough River Pilot Watershed

Total Estimated Federal Cost..... \$ 373,000
Total Obligations through June 30, 1956..... \$ 165,611

One of the two floodwater retarding structures planned for this watershed has been completed. The easements and rights-of-way have been secured for the second structure and construction should be completed in the current fiscal year. Five miles of roadside erosion control treatment has been completed in cooperation with the Department of Public Highways. State and

local subdivisions of government will furnish the necessary labor and equipment to stabilize three additional miles of new roadsides recently constructed within the watershed. Contracts have been awarded and work is now in progress on 2.2 miles of sub-watershed waterway improvement and 12 acres of gully control work on the stabilization of critical sediment producing areas. About 55 percent of the land treatment measures planned to be installed by the landowners are completed. Under the guidance and supervision of the Forest Service, 998 acres of critical sediment producing areas are scheduled to be planted to trees, of which 223 acres have been planted to date.

Plum Creek Pilot Watershed

Total Estimated Federal Cost..... \$ 532,000
Total Obligations through June 30, 1956 \$ 349,338

As of June 30, 1956, twelve floodwater retarding structures planned for this watershed had reached the contract stage. All work had been completed on five structures and construction had begun on two others. Surveys have been completed and planning operations are in progress on one additional structure site preparatory to construction in 1957. Easements and rights-of-way for these structures which were contributed by 32 landowners were valued at \$48,000.

Three miles of floodways have been completed and seven additional miles are under contract. Easements are available for seven miles of stream channel work planned for 1957.

The Forest Service in the past year planted 12 acres of trees on agricultural land to stabilize severe sediment producing areas.

Ninety-eight farmers in the watershed area, involving an estimated 18,000 acres of land (75 percent of the agricultural land in the watershed), have developed conservation farm plans for their farms. Approximately 24 percent of the planned land treatment measures have been installed.

Red River Pilot Watershed

Total Estimated Federal Cost \$ 600,000
Total Obligations through June 30, 1956..... \$ 248,005

Five and one-tenth miles of stream channel improvement have been contracted and work virtually completed during fiscal year 1956. Easements and rights-of-way, having an estimated value of \$11,500, have been contributed by 70 landowners to permit stream channel improvement work. Over 200 cooperators with the local soil conservation district have developed conservation farm land on about 22,000 acres of the watershed. Such plans now cover about 38 percent of the agricultural land in the watershed. About one-third of the needed land treatment measures have been installed.

All woodland was under forest fire protection of the Kentucky Forestry Service at the time the project was started. Over 400 acres of trees have been planted on agricultural land to stabilize severe sediment producing areas and improved forest management work has been carried out on 700 acres of woodland. Other critical areas are being revegetated by the use of grass. These seedings are promoting considerable interest in a grassland economy for the area.

Twin Creek Watershed (P. L. 566)

Total Estimated Federal Cost.....\$ 51,585
Total Obligation through June 30, 1956..... None

This watershed covers an area of approximately 17,000 acres in Harrison County, Kentucky. Approximately 28 percent of the watershed is cropland; 58 percent is grassland; 13 percent is woodland and 1 percent miscellaneous, such as towns, roads, etc.

The structural measures included in the plan consist of 2 floodwater retarding structures and 3.6 miles of stream channel improvement. These measures will be operated and maintained by the Harrison County Soil Conservation District.

Land treatment measures to be installed consist primarily of diversion terraces, field terraces, contour farming, waterway development, cover crops and farm ponds. These measures will be installed, operated and maintained by the local landowners.

Upper Green River Pilot Watershed

Total Estimated Federal Cost.....\$ 382,000
Total Obligations through June 30, 1956.....\$ 266,541

As of June 30, 1956, four of the five floodwater retarding structures planned for this watershed had reached the contract stage. One structure had been completed and construction had begun on two others. Ninety percent of the easements have been procured for the remaining stream channel work on the South Fork of the Green River to be contracted in 1957. To date four and one-half miles of stream channel improvement has been completed.

There are 360 farms in the watershed area, involving approximately 24,000 acres. Of this total, 104 farmers have developed basic conservation farm plans on approximately 9,000 acres (37 percent of the watershed area) and about 40 percent of the planned land treatment measures have been installed. The installed cooperative forest fire protection program has effectively reduced the area of woodland burned annually from 6 percent of the woodland area to one-half of one percent.

LOUISIANA

Bayou Dupont Watershed (P.L. 566)

Total Estimated Federal Cost..... \$ 888,225
Total Obligation through June 30, 1956..... None

This watershed covers an area of approximately 57,610 acres in Natchitoches and Sabine Parishes, Louisiana. Approximately 18 percent of the watershed is cropland; 7 percent is grassland; 74 percent is woodland and 1 percent is miscellaneous, such as towns, roads, etc.

The major works of improvement planned for this watershed consist of 22 floodwater retarding structures and 2.95 miles of floodways.

The land treatment measures planned will include terraces, waterways, cover crops, and crop rotations, farm ponds and pasture and woodland improvement. These structural and land treatment measures will be operated and maintained by local organizations and landowners in the watershed.

MINNESOTA

Chippewa River Tributaries and Hawk Creek Pilot Watershed

Total Estimated Federal Cost..... \$ 1,627,000
Total Obligations through June 30, 1956..... 169,082

As of June 30, 1956, the sponsoring soil conservation districts had accepted the work plans approved by the Service for Shakopee and Mud Creek sub-watersheds. Work plan preparation for the Hawk Creek sub-watershed was started in March, 1956.

Separate committees for each of the three sub-watersheds have been especially aggressive through neighborhood meetings in stimulating interest in the land treatment phases of the program and in developing a sound understanding of the entire watershed program.

There are 2,834 farmers in the three sub-watersheds with an area of 583,168 acres. As of June 30, 1956, 624 farmers had become soil conservation district cooperators of which 78 had developed conservation farm plans. Contour farming and strip cropping had been applied on 9994 acres. Wind strip cropping had been applied on 840 acres. About 5 miles or 21 acres of field waterways had been established. Drainage improvements include 6.7 miles of open ditch drainage and 68,328 lineal feet of tile drains. Other practices initiated include 29 acres of wildlife area improvement, $\frac{1}{2}$ mile of field wind breaks and $\frac{1}{2}$ mile of terracing.

Rush Pine Creek Watershed (P. L. 566)

Total Estimated Federal Cost\$ 49,510
Total Obligation through June 30, 1956\$ none

The sponsoring local organizations of this watershed are the Whitewater, East Fillmore and Root River Soil Conservation Districts and the Rushford Conservancy District. This watershed covers an area of approximately 88,000 acres in Winona, Fillmore and Houston Counties. Approximately 69 percent of the watershed is cropland; 15 percent is grassland; 19 percent is woodland and 6 percent miscellaneous, such as towns, roads, etc.

The major works of improvement planned for the watershed consist of mechanical jetties, willow jetties, fencing, channel cut-off and mesh fencing to control the sand originating from sand areas and sand terraces adjacent to certain channels. The maintenance will be done by the Rushford Conservancy District.

Land treatment measures will be installed, operated and maintained by the landowners and operators on whose farms the measures are located.

South and North Fork of the Crow Pilot Watershed

The watershed has not been authorized because no qualified local agency was willing to sponsor it.

East Willow Creek Pilot Watershed

Total Estimated Federal Cost\$ 225,000
Total Obligations through June 30, 1956\$ 126,178

As of June 30, 1956, four of the seven floodwater retarding structures planned for this watershed had reached contract stage. Three were entirely completed and construction had started on the fourth. Surveys were more than half completed for the other three which are to be built in 1957. Fourteen of the 17 gully stabilizing structures had been constructed or were under contract and surveys were nearly complete for the remaining three which are to be constructed this fiscal year.

Woodland management plans have been completed by the Forest Service on 189 acres and woody plantings established on 12 acres.

Farm conservation plans have been developed with 85 farmers operating 12,300 acres of land in the watershed which is 54 percent of the agricultural land. Seventy-five percent of the land treatment measures included in these conservation plans have been installed.

MISSOURI

East Branch of the South Fork of the Blackwater River Pilot Watershed

Total Estimated Federal Cost\$ 449,000
Total Obligations through June 30, 1956\$ 205,613

As of June 30, 1956, 12 stabilizing structures with 365 acre feet of temporary storage for flood prevention had been completed or were under contract. Six additional construction jobs consisting of 3 structures, 2 diversions, and 1 floodway are planned for construction early this fiscal year.

Easements and rights-of-way having an estimated value of \$12,000 have been donated by approximately 25 landowners.

Sixty percent of the farmers in the watershed have farm conservation plans for their farms comprising about 72 percent of the land area. About 35 percent of the land treatment measures included in these plans have been installed. Waterways and terrace outlets are more than 50 percent complete. A rainfall deficiency of 47.5 inches below normal since the start of the project has restricted establishment and growth of pastures and waterways. The resulting loss in farm income has considerably retarded the application of land treatment measures. The Forest Service and the Missouri Conservation Commission have cooperated in the installation of forest and wildlife plantings. This work consists primarily of planting 2,385 rods of multiflora rose fence for wildlife cover, 15 acres of interplanting and 2 acres of forest planting.

The Boy Scouts of America have brought troops of 100 boys to this project for the third consecutive spring and fall to enjoy a day in the watershed and at the same time to participate in planting trees and multiflora rose seedlings. Publicity programs accompanying this event have served to stimulate much interest in watershed work in Missouri among the local people.

Lost Creek Pilot Watershed

Total Estimated Federal Cost\$ 328,000
Total Obligations through June 30, 1956\$ 115,807

As of June 30, 1956, one of the four floodwater retarding structures planned for this watershed had been completed and one additional was under contract. Also, four of the twenty-one stabilizing and sediment control structures had been completed, and three additional ones were ready for award of contracts early in the current fiscal year.

There are 89 farms in the watershed area involving 8,960 acres of land. Of these 64 are soil conservation district cooperators and 46 have basic conservation plans for their farms. About 45 percent of the planned land treatment measures have been installed. However, dry weather in the last few years has handicapped the establishment of vegetative practices in the watershed.

Easements, rights-of-way and seeding of fills having an estimated value of \$8,055 have been contributed by 8 landowners to permit the construction of the two flood water retarding and four stabilizing and sediment control structures.

The Forest Service has placed 1,535 acres of woodland under cooperative forest fire control. They have planted 5 acres of trees on agricultural land to stabilize severe sediment producing areas during the past year.

MONTANA

Muster Creek Pilot Watershed

Total Obligations through June 30, 1956.....\$8,622

Authorization for this watershed was withdrawn at the request of the sponsors effective April 1, 1955.

NEBRASKA

Brownell Creek Pilot Watershed

Total Estimated Federal Cost.....\$523,000

Total Obligations through June 30, 1956.....\$218,634

As of June 30, 1956, one of the four planned floodwater retarding structures and two of the five planned combination (floodwater retarding and grade stabilization) structures had been completed and two additional were under construction. Field surveys and foundation investigations had been completed on one combination and six grade stabilization sites for structures to be installed during the 1957 fiscal year.

The Brownell Creek Watershed covers an area of 15,134 acres or 23.6 square miles. There are 90 farm operating units wholly or partially within the watershed area. Conservation plans developed by the farm operators and the Otoe Soil Conservation District cover approximately 12,000 acres or 80 percent of the agricultural land within the watershed. It is estimated that approximately 70 percent of the needed land treatment measures had been completed on these 12,000 acres. Some sub-watersheds, particularly the "Whitehead", have almost 100 percent of the land treatment measures installed. The Forest Service has participated in the establishment of 16 acres of woodland within the watershed area.

Easements and rights-of-ways having an estimated value of \$9,560 have been donated by landowners for 15 structures which have been completed or are now under construction. The Otoe County Board of Commissioners has given financial assistance on one road structure and labor and equipment on a second road structure, both of which serve for grade stabilization.

Dry Creek Pilot Watershed

Total Estimated Federal Cost\$ 368,000
Total Obligations through June 30, 1956\$ 160,716

As of June 30, 1956, one floodwater retarding and one combination (floodwater retarding and grade stabilization) structure had been completed of the 10 planned structures in this watershed. Four of the remaining 8 floodwater retarding or combination structures were under contract of which one was nearly complete.

The pipe for three grade stabilization structures on county roads in the Frontier County portion of the watershed was supplied by the Soil Conservation Service and installation work was done by the County Board of Commissioners.

Easements and rights-of-way valued at \$13,055 have been contributed by 22 landowners. There are 35,372 acres in 108 farms wholly or partially within the watershed area. Farm conservation plans have been developed for 30,822 acres, which is 91 percent of the cultivated land within the watershed. Approximately 58 percent of the planned land treatment measures have been installed.

Indian Creek Pilot Watershed

Total Estimated Federal Cost\$ 887,000
Total Obligations through June 30, 1956\$ 385,978

As of June 30, 1956, 7 floodwater retarding and combination floodwater retarding and grade stabilization structures had been installed of the 29 planned structures in this watershed. In addition, 18 grade stabilization structures had been installed. Five additional floodwater retarding structures and 2 grade stabilization structures were under construction.

There are 47,870 acres involving 321 operating units wholly or partially within the watershed area. Over 250 of these are cooperators with the Gage County Soil Conservation District including 41,383 acres or 86 percent of the total watershed area. Of the 253 cooperators, 172 have complete basic conservation plans for their farms involving 28,864 acres or 60 percent of the watershed area.

Approximately 70 percent of the land treatment practices have been installed on the 172 operating units for which basic conservation plans exist. Field terraces and grassed waterways are two of the more important conservation measures needed on the lands within the watershed. Approximately 600 miles of terraces had been constructed and 1,304 acres of grassed waterways had been shaped and seeded on these 172 operating units.

The Forest Service has participated in the establishment of 29 acres of woodland within the watershed. The State Game Forestation and Parks Commission has also made several wildlife habitat plantings, principally multiflora rose and red cedar for cover.

Easements and rights-of-way having an estimated value of \$77,240 had been donated to date by approximately 31 landowners for the 12 floodwater retarding or combination structures that were completed or were under construction. Gage County and several townships had contributed about \$3,000 toward the construction cost of structures where the structures eliminated the need for road bridges.

Oak-Middle Creek Tributaries of Salt Creek Watershed (P.L. 566)

Total Estimated Federal Cost.....\$786,450
Total Obligation Through June 30, 1956..... none

The sponsoring local organizations for this watershed are the Dutler, Lancaster, Saunders and Seward Soil Conservation Districts. The watershed work plan covers an area of 62,810 acres in Butler, Lancaster, Saunders and Seward Counties, Nebraska.

The structural measures planned for this watershed are 21 floodwater retarding structures. These floodwater retarding structures will be operated and maintained by the local sponsors.

The land treatment measures planned are range seeding, 13,145 acres; contour furrowing, 3,485 acres; 4,940 acres of terraces; 80 miles of diversion terraces; 3,550 acres of waterways and 459 drop inlet grade control structures. These land treatment measures will be installed, operated and maintained by the landowners or operators of the farms on which the measures are installed.

Plattsmouth Watershed (P.L. 566)

Total Estimated Federal Cost.....\$ 66,550
Total Obligation through June 30, 1956.....none

The local sponsoring organizations of this watershed are the city of Plattsmouth and the Cass Soil Conservation District. The watershed covers an area of approximately 2,500 acres in Cass County, Nebraska. Approximately 40 percent of the watershed is cropland, 14 percent is grassland, 4 percent is woodland, and 42 percent includes the city of Plattsmouth and other miscellaneous land.

Structural measures included in the plan consist of 5 floodwater retarding structures, and 5 combination floodwater retarding, sediment retention and grade stabilization structures. The city of Plattsmouth will be responsible for operation and maintenance of all structural measures installed in the watershed.

The land treatment measures planned include crop rotations, terracing, waterway construction and construction of drop inlet dams. These measures will be installed, operated and maintained by the local people.

Upper Salt-Swedeburg Pilot Watershed

Total Estimated Federal Cost.....\$1,618,000
Total Obligations through June 30, 1956.....\$ 620,828

As of June 30, 1956, six of the 26 floodwater retarding and 3 of the 7 combination (floodwater retarding and grade stabilization) structures planned for the Upper Salt-Swedeburg Watershed had been installed. In addition 24 grade stabilization structures had been built. Field surveys and foundation or sub-surface explorations had been completed on 11 additional structure sites preparatory to construction during the 1957 fiscal year.

The Forest Service has participated in the establishment of 15 acres of woodland in the watershed.

Easements and rights-of-way worth \$20,520 have been supplied by 57 landowners for the 9 structures now completed and 7 additional which will be constructed in the 1957 fiscal year.

NEW HAMPSHIRE

Baboosic Brook Pilot Watershed

Total Estimated Federal Cost.....\$ 74,000
Total Obligations through June 30, 1956.....\$ 44,689

The Baboosic Brook Pilot Watershed Project work plan does not contain planned structural measures. It is strictly a land treatment type of project.

As of June 30, 1956, basic plans had been completed on 69 farms. District watershed agreements had been signed on 152 farms representing 73 percent of the total farms in the watershed and approximately 50 percent of total project area. Establishment of conservation practices on the land in relation to total conservation needs has been slow.

Under the direction of the Forest Service, 57 acres have been planted to trees and forest management assistance has been provided on 8,204 acres. Also, excellent cooperation from the New Hampshire Fish and Game Department has resulted in an active program to develop wildlife resources. A technician of the Fish and Game Department has been assigned to work within the project area.

NEW JERSEY

Pequest Pilot Watershed

Total Estimated Federal Cost.....\$671,000
Total Obligations through June 30, 1956.....\$404,767

As of June 30, 1956, six of the proposed eight miles of channel improvement had reached the contract stage and approximately 36 percent of the work under this contract was completed. The New Jersey State Highway Department is presently engaged in protecting one of its bridges so that the Pequest River channel can be deepened. The County of Warren contributed \$10,000 to underpin one of its bridges. Plans for the extension of the channel improvements are being delayed until easements are obtained. Easements and rights-of-way having an estimated value of \$14,500, have been donated by approximately 30 landowners to permit the channel improvements presently under way.

Excellent cooperation was received from the Vo-Ag students at Newton High School in tree planting. A total of 66 acres were planted to trees during 1956, of which 44 acres were critical runoff areas. Forest management assistance including reconnaissance, marking, harvest cutting, and preparation of plans covered 1,606 acres during the year. The trees were furnished by the New Jersey Fish and Game Department.

Of the 310 farms in the area 44 percent have farm conservation plans covering 59 percent of the land. About 50 percent of the total planned land treatment measures have been established.

NEW MEXICO

Hatch Valley Arroyo Watershed (P.L. 566)

Total Estimated Federal Cost.....	\$137,261
Total Obligation through June 30, 1956.....	\$ 1,323

The watershed covers an area of approximately 14,500 acres in Dona Ana and Sierra Counties, New Mexico. Approximately 8 percent of the area is cropland and 92 percent is range land.

Structural measures planned for installation are 6 floodwater retarding structures, 5 stabilizing structures, 13 miles of fence to protect the structures and de-silting areas and 1.2 miles of channel improvement. The structural measures will be operated and maintained by the Elephant-Butte Irrigation District. The principal land-treatment measure needed in this watershed is range improvement. All the cropland in the watershed is under cooperative agreement with the Caballo Soil Conservation District and a high percentage of conservation measures has been applied.

Sandia Mt. Tributaries Pilot Watershed

Total Estimated Federal Cost.....	\$116,000
Total Obligations through June 30, 1956.....	\$132,454

As of June 30, 1956, one floodwater retarding structure was completed. This structure will provide protection to about 2,000 acres of irrigated farm land, 260 acres of urban area in the northern sector of the town of Bernalillo, U. S. Highway 85, and the main line of the A.T. and S. F. Railway. Local interests, including the A.T. and S.F. Railway shared in the construction cost of the structure.

The application of land-treatment measures on privately owned grazing lands in the watershed above the structure and on the irrigated lands is well advanced. Rain gauges and other instrumentation needed to evaluate the effect of the retarding dam and land treatment measures have been installed in the watershed.

The Forest Service has constructed 58 miles of special purpose terraces and 5 miles of terraces on steep slopes on national forest lands in the watershed. Other accomplishments include 340 acres of gully control work, 363 stabilizing structures, and 30 acres of woody plantings. Range development and improvement work completed include 8 miles of fence, 1,150 acres of contour pitting, and 375 acres of contour chiseling.

On July 27, 1955, a series of three storms, with a maximum rainfall intensity of 3.3 inches per hour for a two-minute period, produced 2.4 inches of rain in the headwaters area. No surface runoff occurred on 1,300 acres of mesa land treated with special purpose terraces, pitting, and chiseling, although a maximum discharge of about 10 second-feet originated from the largest untreated area. It is estimated that over 200 acres-feet of water was retained in the treated area.

Upper Rio Hondo Pilot Watershed

Total Estimated Federal Cost.....	\$777,000
Total Obligations through June 30, 1956.....	\$233,097

As of June 30, 1956, 41 stabilizing and sediment control structures, 9 debris basins, and 0.2 miles of stream channel improvement had been installed in the watershed. Work had also begun on a contract for one half mile of channel improvement and associated stream bank protection work.

Some preliminary engineering and geological work has been done at the site of a floodwater retarding dam scheduled for construction during fiscal year 1957. This structure will have a retarding capacity of about 4,000 acre feet and will provide protection for farm land along the Rio Bonito and Rio Hondo Rivers. The construction of this dam has been held up due to the inability of the sponsors to obtain an easement, which they expect to secure in the near future.

Substantial progress is being made by farmers and ranchers in applying land treatment conservation measures on watershed lands as a part of the regular conservation program of the Upper Hondo Soil Conservation District. Progress in improving grazing management has been especially noteworthy.

The Forest Service has been carrying out a land stabilization and management program on national forest lands in the headwaters of the watershed. In addition to improvements in timber and grazing management practices, the following stabilizing and conservation measures have been established:

<u>Measure</u>	<u>Unit</u>	<u>No.</u>
Stabilizing and Sediment Control Structures	Each	560
Roadside Erosion Control	Mile	33
Gully Control	Acre	5,865
Contour Furrowing	Acre	743
Pond Development	Each	31
Erosion Control Structures	Each	57
Seeding Grass and Herbaceous Plants	Acre	100

NEW YORK

Ball Creek Pilot Watershed

Total Estimated Federal Cost	\$ 78,000
Total Obligations through June 30, 1956	\$ 20,329

As of June 30, 1956, no structural measures had been installed in this watershed due to lack of easements. On June 26, 1956, The Chautauqua Lake Association, offered to stand the costs of doing certain drainage work to pay for these easements. This project was discontinued, with the concurrence of the sponsors, on December 31, 1956.

There are 33 cooperators in the watershed and basic plans have been prepared with 17 covering land treatment on 1,785 acres. However, the establishment of land treatment measures has been slow. The Forest Service, through the New York State Conservation Department, has contacted 18 owners of woodland. Five of these have signed Forest Practice agreements involving 141 acres of woodland. Over one hundred acres have been marked for harvest cutting and 13 acres for timber stand improvement.

Dean Creek Pilot Watershed

Total Estimated Federal Cost	\$125,000
Total Obligations through June 30, 1956	\$116,952

As of June 30, 1956, 10 of the 14 debris basins, the 2 impounding structures, and 2 miles of stream channel capacity improvement had been installed. The effectiveness of these structures was observed last fall, when 6.41 inches of rainfall was recorded on October 15 and 16. About 2.2 inches of this rainfall occurred in a 4½ hour period. The stream stayed within its banks except for a short distance above its confluence with Catatunk Creek. There was practically no damage to crop land along Dean Creek. The damage to highways was slight. In the past, according to local residents, rains of similar intensity resulted in severe highway damage as well as damage to the Lehigh Valley Railroad. The debris basins were effective in holding back gravel and silt. They were cleaned out in the spring through the cooperation of the Lehigh Valley Railroad, Tioga County Soil Conservation District, town of Spencer, Tioga County, and town of Van Etten, Chemung County. The material was used for highway maintenance. This is the first cleaning the debris basins have needed since they were constructed in 1953.

There are 43 landowners in the watershed. Thirty landowners are cooperators and 17 have farm conservation plans. More than 27 percent of the land treatment measures excluding tree planting, have been applied. Thirty-seven percent of the tree planting has been jointly accomplished by the Soil Conservation Service and the Forest Service working with the Tioga County Soil Conservation District. Farm planning to date indicates that the total needs for land treatment measures may be somewhat lower than shown in the work plan.

Great Brook Pilot Watershed

Total Estimated Federal Cost	\$ 102,000
Total Obligations through June 30, 1956	\$ 41,819

As of June 30, 1956, an easement had been obtained for the construction of one of the two debris dams planned for this watershed and installation was planned for 1957.

There are 90 landowners in the watershed who have developed basic plans on 9,800 acres. This represents about 75 percent of the privately owned land. About 30 percent of the land treatment program, excluding tree planting and thinning, has been applied. Approximately 70 percent of the tree planting has been accomplished jointly by the Soil Conservation Service and the New York State Conservation Department working through the local soil conservation district. About 80 percent of the timber stand improvement on State owned land has been carried out by the New York State Conservation Department.

Little Hoosick Pilot Watershed

Total Estimated Federal Cost	\$ 469,000
Total Obligations through June 30, 1956	\$ 88,759

Local people have completed one debris dam and plan to construct another in the fall of 1956. Four and two tenths miles of clearing and channel improvement have been completed on the main stream.

The watershed contains 48,298 acres of land in farms. Of the 140 landowners, 40 are cooperating with the soil conservation districts and 19 of them have farm conservation plans.

Easements and rights-of-way have been donated by landowners to permit additional channel improvement on the river and its tributaries during Fiscal year 1957. Progress in the installation of land treatment measures has been slow because a large number of absentee owners are involved and the resident farmers are in poor financial position to install conservation measures.

The Forest Service has planted 48,000 trees on critical sediment source areas and 95,000 trees for land treatment. Sixty-seven landowners are cooperating with the Forest Service and have thinned 120 acres of woodland and marked 100 acres for harvest.

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NORTH CAROLINA

Third Creek Pilot Watershed

Total Estimated Federal Cost \$ 570,000
Total Obligations through June 30, 1956 \$ 315,787

As of June 30, 1956, two of the 11 floodwater retarding structures planned for the watershed had been completed and work had begun on 2 others. District supervisors and members of the watershed association have been able to secure easements on only 5 of the 11 structure sites proposed. More than 10 of the 43 miles planned for stream channel improvement had been completed, and contracts for additional sections will be awarded during the fiscal year 1957.

Four hundred and sixty-seven farmers, owning more than 32,000 acres of land, had developed conservation farm plans. This represents more than 70 percent of the farmers in the watershed and 64 percent of the land area. Approximately 30 percent of the needed land treatment measures have been applied. Over 37,000 pine tree seedlings were planted on 35 acres in Alexander and Iredell Counties during the past year. In addition, 17,000 seedlings were furnished by the North Carolina Division of Forestry to 3 landowners in Alexander County and planted on critical sediment producing areas.

NORTH DAKOTA

Tongue River Pilot Watershed

Total Estimated Federal Cost \$ 2,900,000
Total Obligations through June 30, 1956 \$ 604,292

As of June 30, 1956, three of the twelve floodwater retarding structures planned for this watershed were under construction and a contract had been awarded for another. Surveys and soil investigations were in progress on four additional structure sites preparatory to construction in 1957. A contract had been awarded to construct 11.5 miles of floodway and preliminary planning had begun on another floodway which will be approximately 20 miles in length. Over 11 miles of channel improvement had been completed and surveying was in progress on an additional 45 miles of proposed river channel improvement.

Land treatment measures are progressing satisfactorily with the most progress being made on tree planting, strip cropping and crop residue management. Over 250 acres of trees and shrubs have been planted on cropland. Strip cropping has been established on 3,250 acres and 35,929 acres of cropland has been protected by crop residue.

The Forest Service has planted 7 acres of trees along the Tongue River as snowtraps to prevent the snow from drifting into the channel, and has started to set up a fire protection organization. When the organization is completed, there will be 55 square miles of native woodland in the watershed under fire protection.

OHIO

Rocky-Fork Clear Creek Branch Pilot Watershed

Total Estimated Federal Cost \$ 263,000
Total Obligations through June 30, 1956 \$ 78,945

As of June 30, 1956, bids had been advertised for construction of 2 of the 14 proposed stabilizing and sediment control structures and a contract had been awarded for 2 floodways.

Measures now installed include, 2.2 miles of floodways, 1.4 miles of diversion ditches and dikes, one-half mile of roadside erosion control, and 2 acres of woody planting.

Farmer contributions for structural measures total about \$7,600 of which \$3,200 is for easements and rights-of-way.

About 25 percent of the land treatment measures planned are now installed, ranging from 62 percent of the terracing to 10 percent of the pasture seeding.

During the year, 4 farmers were given assistance on 126 acres of timber, 201,000 board feet were marked for cutting, 138 acres were selectively cut (10 acres were marked in fiscal year 1954), 126 acres were protected from fire and grazing, and 2 acres of eroding land were planted to trees.

Upper Hocking Pilot Watershed

Total Estimated Federal Cost \$ 719,000
Total Obligations through June 30, 1956 \$ 365,721

As of June 30, 1956, two of the nine floodwater retarding structures planned for this watershed had been installed. Final surveys were completed on four of the remaining seven, with two structures designed and ready for award of contracts in 1957. Surveys were in progress on the remaining three structures.

Seven of the 66 stabilizing and sediment control structures were under contract, with five completed at the end of the year. One of 5½ miles of planned stream channel improvement had been completed. Easements and rights-of-way valued at \$11,500 had been furnished by 13 landowners to permit the construction.

The Forest Service had placed 1,700 acres of woodland under fire protection and 109 acres of trees had been planted on agricultural land to stabilize sediment producing areas.

Significant progress has been made by 136 farmers in the watershed cooperating with the soil conservation district. About 65 percent of the needed conservation practices had been installed on 17,541 acres of farmland which is 63 percent of the agricultural land in the watershed.

OKLAHOMA

Big Wewoka Creek Watershed (P.L. 566)

Total Estimated Federal Cost	\$ 1,858,331
Total Obligation through June 30, 1956	841

The watershed covers an area of approximately 172,525 acres in Pottawattomee, Seminole and Hughes Counties, Oklahoma. Approximately 36 percent of the watershed is cropland; 29 percent is grassland; 31 percent is woods and pasture and 4 percent is miscellaneous, towns, roads, etc. Indian lands administered by the Bureau of Indian Affairs are included in this project.

The structural measures planned for installation consist of 42 floodwater retarding structures. These structures will be operated and maintained by the Wewoka Creek Water Conservancy District, assisted by a maintenance association membership which is made up primarily of benefited landowners.

An important phase of land treatment work planned for this watershed is the establishment of adequate cover on over-grazed pasture and range lands and former cultivated lands which are idle or abandoned. This involves the sprigging and seeding of 52,168 acres of pastureland and 12,071 acres of range land and eradication of brush on 15,241 acres of wooded pasture land. Other land treatment measures needed are 396 miles of terraces, 179 miles of diversion terraces, 420 acres of waterways and 794 farm ponds. These measures will be installed, operated and maintained by the local landowners and operators.

Double Creek Pilot Watershed

Total Estimated Federal Cost	\$ 373,000
Total Obligations through June 30, 1956	\$ 346,238

As of June 30, 1956, all six of the planned floodwater retarding structures had been completely installed. All easements and rights-of-way, having an estimated value of \$70,120, have been contributed by 40 landowners to permit the construction of the six floodwater retarding structures.

Farm conservation plans had been developed for 115 farms involving 15,227 acres of the watershed. Over 130 farmers and ranchers with 27,819 acres of land are cooperating with the soil conservation district. This is 94 percent of the agricultural land in the watershed. These cooperators have applied about 55 percent of the planned land treatment measures.

Little Wewoka-Graves Creek Watershed (P.L. 566)

Total Estimated Federal Cost	\$846,986
Total Obligations through June 30, 1956	269

The watershed covers an area of 122,455 acres in the Seminole, Hughes and Okfuskee Counties, Oklahoma. Approximately 35 percent of the watershed is cropland, 29 percent is grassland, 33 percent is woods and pasture and 3 percent is miscellaneous, such as towns, roads, etc. Indian lands administered by the Bureau of Indian Affairs are included in the project.

The major works of improvement planned for this watershed consist of 18 floodwater retarding structures. These structures will be operated and maintained by the Wewoka Creek Conservancy District No. 2 assisted by benefited landowners in the watershed.

The land treatment measures planned for this watershed include seeding pasture and range land, brush eradication, terraces, diversion terraces, waterways, crop rotations and farm ponds. These measures will be installed, operated and maintained by the local landowners in the watershed.

Long Branch Creek Watershed (P.L. 566)

Total Estimated Federal Cost	\$ 283,986
Total Obligations through June 30, 1956	none

The sponsoring local organizations for this watershed are the Black Bear Conservancy District and the Noble and Payne Counties Soil Conservation Districts. The watershed covers an area of approximately 28,000 acres. Approximately 64 percent of the area is cropland, 24 percent is grassland, 9 percent is woods and pasture, and 3 percent is miscellaneous, such as towns and roads, etc.

Structural measures planned for the watershed are 11 floodwater retarding structures. These structures will be operated and maintained by the local sponsors.

The land treatment measures needed include, seeding of 2,744 acres of idle land and pastures, construction of 280 miles of terraces, 17 miles of diversion terraces, and 60 stock ponds. These measures will be installed, operated and maintained by the landowners in the watershed.

PENNSYLVANIA

Corey Creek Pilot Watershed

Total Estimated Federal Cost	\$ 104,000
Total Obligations through June 30, 1956	\$ 55,550

All soil surveys have been completed and farm planning is completed on over 90 percent of the land area which includes all active farms in the watershed. The remaining 10 percent of the land area is miscellaneous tracts of non-agricultural land. Approximately 21 percent of the planned land treatment

practices had been applied. Thirty miles of the planned 39 miles of diversion terraces had been installed. Fifty-three acres of the planned 200 acres of tree planting on critical areas, has been completed under the direction of the U. S. Forest Service. The local people have shown an exceptionally high interest in the land treatment measure phase of the program.

Jack's Run Pilot Watershed

This project has not been authorized due to the fact that no qualified local agency was willing to sponsor it.

SOUTH CAROLINA

Coneross Creek Watershed (P.L. 566)

Total Estimated Federal Cost.....\$ 446,695
Total Obligations through June 30, 1956..... None

This watershed covers an area of approximately 43,300 acres in Oconee County, South Carolina. Approximately 46 percent of the watershed is cropland; 6 percent is grassland; 39 percent is woodland; and 9 percent idle land and miscellaneous, such as towns, roads, etc.

The major works of improvement planned for this watershed consist of 47 miles of roadside erosion control, stabilization of 1,790 acres of critical sediment producing areas, 7.5 miles of channel improvement, 5 floodwater retarding structures, and cooperative forest fire protection on 17,467 acres of woodland.

Land treatment measures to be installed by the landowners or operators include 323 miles of terracing, 914 acres of waterways, 1,033 acres of pasture seeding, 507 acres of perennial vegetation improvement, 4,616 acres of contour strip cropping, 258 acres of tree planting and 65 farm ponds.

Twelve Mile Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 1,224,000
Total Obligations through June 30, 1956.....\$ 396,100

As of June 30, 1956, 4 of the 11 floodwater retarding structures planned for this watershed had reached the contract stage. Earth work had been completed on 3 structures and a contract awarded for the 4th. Surveys and core drilling operations had been completed on a 5th structure and surveys were in progress on 3 additional structure sites preparatory to construction in 1957. Over 16 miles of stream channel clearance, or approximately 50 percent of the total planned for the watershed, had been completed.

Easements and rights-of-way having an estimated value of \$20,000 have been donated by 57 landowners to permit the construction of the five floodwater retarding structures.

There are 461 farmers in the watershed area involving 38,284 acres of land (57 percent of the agricultural land in the watershed) cooperating with the Lickens Soil Conservation District. Over 200 of these have conservation farm plans and about 50 percent of the planned land treatment measures have been installed on these farms.

The Forest Service, in cooperation with the State Commission of Forestry, has planted about 1,324 acres of trees on agricultural land to stabilize severe sediment producing areas. All woodland in the watershed is under forest fire protection.

SOUTH DAKOTA

Scott Creek Pilot Watershed

Total Estimated Federal Cost.....	\$ 132,000
Total Obligations through June 30, 1957.....	\$ 124,335

The structural program on the Scott Creek Watershed was completed in April 1956. These measures included two floodwater retarding dams, one drop spillway, eight grade stabilization structures, and one and three-quarter miles of floodway improvement and diversions.

There are 24 landowners in this watershed of 2,900 acres. Basic conservation plans have been developed for 22 farms and about 50 percent of all the planned land treatment measures have been installed. The needed contouring has all been applied. Sixteen miles of terraces and 36 acres of waterways have been installed.

Stream gaging instrumentation is being provided by the U. S. Geological Survey and precipitation records are being obtained by the U. S. Weather Bureau, to determine the effectiveness of the measures installed in this watershed.

TENNESSEE

Johnson Creek Watershed (P.L. 566)

Total Estimated Federal Cost.....	\$ 355,855
Total Obligations through June 30, 1956.....	None

The sponsoring local organizations for this watershed are the Madison County Soil Conservation District and the Johnson Creek Watershed District. The watershed covers an area of approximately 22,610 acres in Madison County, Tennessee. Approximately 44 percent of the watershed is cropland; 8 percent is grassland; 21 percent is woodland; 24 percent is idle land and 3 percent miscellaneous, such as roads, towns, etc.

The major works of improvement planned for this watershed consist of 5 floodwater retarding structures, 15.4 miles of stream channel improvement, 1,638 acres of tree planting, and 27.4 miles of roadside erosion control. The structural measures will be operated and maintained by the Johnson Creek Watershed District.

Land treatment measures scheduled for installation are as follows: conservation crop rotation, 6,534 acres; pasture planting, 962 acres; diversion construction, 44 miles; drainage, 1,875 acres; terracing, 213 miles; tree planting, 810 acres and 52 farm ponds. These land treatment measures will be installed, operated and maintained by landowners and operators in the watershed.

Wolf River Tributaries Pilot Watershed

Total Estimated Federal Cost.....	\$ 396,000
Total Obligations through June 30, 1956.....	\$ 188,175

On the Sand Creek tributary of this watershed about 80 percent of the farmers are soil conservation district cooperators and approximately 40 percent of the planned land treatment has been established. Exemplary cooperative work on roadside erosion control and gully stabilization was accomplished during the past year.

On the Mary's Creek tributary, only one of the 10 planned flood retarding structures has been completed. The local people have experienced difficulty in obtaining easements and rights-of-way to permit installation of these structures.

TEXAS

Calaveras Creek Pilot Watershed

Total Estimated Federal Cost.....	\$ 578,000
Total Obligations through June 30, 1956.....	\$ 351,920

As of June 30, 1956, six of the 10 floodwater retarding structures planned for this watershed had been completed and construction work had begun on one additional structure. Three floodwater retarding structures are scheduled for construction during the 1957 fiscal year and surveys and site investigations were underway for the development of plans for these sites.

More than 240 farmers had developed conservation farm plans on 41,573 acres of land in the watershed. These farm plans cover 69 percent of the agricultural land in the watershed. About 5 percent of the planned land treatment measures had been installed. Continuous drought has greatly affected the rate of application of land treatment measures.

Easements and rights-of-way having an estimated value of \$34,000 have been contributed by 42 landowners to permit the construction of the 7 floodwater retarding structures.

Cow Bayou Pilot Watershed

Total Estimated Federal Cost.....	\$ 1,082,000
Total Obligations through June 30, 1956.....	\$ 489,055

As of June 30, 1956, six of the 11 floodwater retarding structures planned for this watershed were under construction. Earthwork had been completed on 4 of these structures. Three additional floodwater retarding structures are scheduled for construction during the 1957 fiscal year, along with some channel improvement work. Easements and rights-of-way having an estimated value of \$40,000 have been contributed by 40 landowners to permit the construction of the 6 floodwater retarding structures and channel improvement work.

Basic conservation farm plans had been developed with 444 farmers and ranchers operating 65,357 acres in the watershed. This is 94 percent of the agricultural land. Continuous drought has greatly affected the rate of application of land treatment measures.

Cummins Creek Watershed (P.L. 566)

Total Estimated Federal Cost.....\$ 1,857,500
Total Obligation through June 30, 1956..... None

The watershed work plan for the Cummins Creek watershed was prepared by the Burleson-Lee, Bastrop-Fayette, Colorado and Austin-Washington Soil Conservation Districts as the sponsoring local organizations. The watershed covers an area of approximately 204,900 acres. Approximately 27 percent of the watershed is cropland; 49 percent is grassland; 22 percent is woodland and 2 percent is miscellaneous, such as towns, roads, etc.

The structural measures in the plan consists of 31 floodwater retarding structures. These structures will be operated and maintained by the sponsoring local organizations.

Land treatment measures planned for installation consists primarily of seeding 41,000 acres of idle and pasture land, 32,000 acres of brush eradication and control, 2,230 miles of terraces, 245 miles of diversion terraces, and 715 stock ponds. These measures will be installed, operated and maintained by the local landowners in the watershed.

Escondido Creek Pilot Watershed

Total Estimated Federal Cost.....\$ 770,000
Total Obligations through June 30, 1956.....\$ 590,463

As of June 30, 1956, 10 of the 11 floodwater retarding structures planned for this watershed had reached the contract stage. Earthwork had been completed on 7 structures and construction was under way on 3 others. The final floodwater retarding structure is scheduled for construction during the 1957 fiscal year. Easements and rights-of-way having an estimated value of \$78,000 had been contributed by 60 landowners to permit the construction of the 10 floodwater retarding structures.

Basic farm and ranch conservation plans had been developed with 342 farmers involving 69,753 acres of land in the watershed or about 97 percent of the agricultural land. About 44 percent of the planned land treatment measures had been installed on these farms.

Green Creek Pilot Watershed

Total Estimated Federal Cost \$1,096,000
Total Obligations through June 30, 1956 \$1,020,719

As of June 30, 1956 all thirteen of the floodwater retarding structures planned for this watershed had been completed or were under construction. Easements and rights-of-way worth about \$45,000 had been donated by 65 landowners to permit the construction of the thirteen floodwater retarding structures.

There are 286 farmers in the watershed area involving 60,340 acres of land (93 percent of the agricultural land in the watershed) who had developed farm plans for their farms. About 43 percent of the planned land treatment measures had been installed. Continuous drought had reduced the rate of application of land treatment measures.

Two severe storms have occurred in this watershed since the inception of the project. The storm of May 28-29, 1955, with rainfall ranging from 4 to 11 inches, centered above three floodwater retarding structures which were in place at the time in the upper reaches of the watershed. The three completed structures and the land treatment measures which had been installed reduced the floodplain damages from a possible \$35,000 to \$1,650. The storm of April 29-May 1, 1956, with rainfall ranging from 10 to 14 inches, centered above the upper 8 floodwater retarding structures which were completed at the time. The 8 floodwater retarding structures and land treatment measures which had been installed reduced the floodplain damages from a possible \$154,000 to \$80,000. A storm of this intensity is expected only once in 50 years.

Johnsons Draw Watershed (P.L. 566)

Total Estimated Federal Cost \$818,519
Total Obligations through June 30, 1956 none

The sponsoring local organizations for this watershed are the Crockett Soil Conservation District and the Commissioners Court of Crockett County. The watershed covers an area of approximately 101,760 acres in Crockett County, Texas. Approximately 99 percent of the watershed is grassland and 1 percent is cropland and miscellaneous, such as roads, towns, etc.

The major works of improvement for this watershed consist of 7 floodwater retarding structures and 1.6 miles of stream channel improvement. These structural measures will be operated and maintained by the sponsoring organizations.

Land treatment measures consist of seeding of adapted grasses on 20,000 acres of range land which has been so overgrazed and injured by drought that re-seeding is necessary to establish adequate cover to reduce erosion and sediment yield. Range pitting will be applied on 15,000 acres of range land to improve infiltration rates, reduce run-off and aid in establishment of desirable vegetative cover. Other needed land treatment measures are proper use of 92,000 acres of range land, deferred grazing of 94,000 acres of range land, and eradication of brush on 12,500 acres.

Lower Brushy Creek Watershed (P.L. 566)

Total Estimated Federal Cost \$2,603,581
Total Obligations through June 30, 1956 none

The sponsoring local organizations for this watershed are the Taylor Soil Conservation District and the Brushy Creek Watershed Association. The watershed covers an area of approximately 138,240 acres in Williamson and Milam Counties, Texas. Approximately 60 percent of the watershed is cropland; 26 percent is grassland; 11 percent is woodland and 3 percent is miscellaneous such as stream channels, towns, roads, etc.

The structural measures planned consist of 25 floodwater retarding structures and approximately 36 miles of stream channel improvement. The sponsoring organizations will operate and maintain these structural measures.

The land treatment measures planned in this watershed consist primarily of seeding 20,000 acres of idle and overgrazed pasture land, 4,485 miles of terraces, 124 miles of diversion terraces, cover crops on 62,300 acres of cultivated land, and 498 farm ponds. These measures will be installed, operated and maintained by landowners in the watershed.

Turkey Creek Watershed (P.L. 566)

Total Estimated Federal Cost \$67,248
Total Obligations through June 30, 1956 none

The watershed covers an area of approximately 18,880 acres in Fort Bend County, Texas. Approximately 72 percent of the watershed is cropland; 24 percent is grassland; 2 percent is woodland and 2 percent miscellaneous, such as towns, roads, etc.

The structural measures planned for this watershed consist of 14.6 miles of main drainage ditch and 20 miles of group lateral ditch for improved drainage. When the structural measures are installed they will be operated and maintained by the local sponsoring organization.

All the land treatment measures planned in this watershed will be installed, operated and maintained by the individual landowners on whose farm they are located.

Upper Brushy Watershed (P.L. 566)

Total Estimated Federal Cost \$2,640,814
Total Obligations through June 30, 1956 none

The watershed covers an area of approximately 191,400 acres in Williamson County, Texas. Approximately 55 percent of the watershed is cropland; 41 percent is grassland, and 4 percent is miscellaneous, such as stream channels, towns and roads, etc.

The major works of improvement planned for this watershed consist of 33 floodwater retarding structures and 6.4 miles of stream channel improvement. These structural measures will be maintained by the Taylor Soil Conservation District.

Land treatment measures will be installed, operated and maintained by the landowners in the watershed.

UTAH

Mill Canyon-Sage Flat Watershed (P.L. 566)

Total Estimated Federal Cost \$ 255,495
Total Obligations through June 30, 1956 \$ 7,502

The watershed covers an area of approximately 15,300 acres in Sevier County, Utah. Approximately 4 percent of the watershed is cropland; 87 percent is woodland.

Federal lands administered by the Forest Service and by the Bureau of Land Management are included in the watershed.

The structural measures planned for the watershed consist of one floodwater retarding structure and channel improvement through the town of Glenwood, Utah. The town of Glenwood will bear the cost of the structural measures installed in the watershed.

Land treatment measures on private lands will be installed, operated and maintained by the landowners of the farms on which the measures are installed under agreements with the Sevier County Soil Conservation District.

Pleasant Creek Pilot Watershed

Total Estimated Federal Cost \$366,000
Total Obligations through June 30, 1956 238,139

Five flood spreading structures together with the related outlet works have been constructed in the existing upper debris basin located in the mouth of Pleasant Creek Canyon. These structures are earth fill with a heavy rock face (average size rock 2 ft. diameter) designed to spread flood flows to

previously unused areas of the basin. Two dikes, one at the mouth of South Fork and an enlargement on the south side of the main debris basin dike were completed. Several hundred feet of new road approaching the latter job was also completed with the assistance of Sanpete County. Irrigation companies on their own initiative completed four major structures needed to complement the outlet works installed.

Work completed by the Forest Service in the national forest area of the watershed consist of 8.3 miles of roadside erosion control, 78 acres of re-seeding, construction of 320 acres of special purpose terraces, construction of 0.2 mile of gully stabilization and 4.5 miles of fences.

Santaquin Canyon Pilot Watershed

Total Estimated Federal Cost	\$ 114,000
Total Obligations through June 30, 1956	\$ 88,233

Local cattlemen have 29 permits to graze 575 cattle on the national forest land of the upper Santaquin Canyon. They have kept the cattle off the watershed range for two years and are presently grazing only half the number permitted and for a shorter period than in the past. As a result range grasses and other vegetation has been re-established. The vegetation is now much more effective in retarding run-off than three years ago. No grazing has been permitted on the 330 acres of contour furrows and revegetated critical erosion area. Twenty-seven ranchers who own almost 13,000 acres of land in the watershed are cooperating with the Nebo Soil Conservation District. Sixteen of them have developed conservation farm or ranch plans for their lands and are installing the needed land treatment practices.

The Forest Service has installed all practices planned for national forest land except the stream channel stabilization.

Detailed construction plans have been developed for a fender or protection dike to convey run-off into the desilting basin which was constructed in 1955. Detailed plans are now being developed to enlarge a canal to carry off excess floodwater without damage to the adjacent agricultural and residential property. Evaluation studies of changes in the kind and amount of range forage in relation to run-off and sediment production are being carried on. Appropriate instruments to measure the rainfall, sediment, and run-off have been installed.

VIRGINIA

East Fork Felling River Pilot Watershed

Total Estimated Federal Cost	\$ 266,000
Total Obligations through June 30, 1956	\$ 167,244

As of June 30, 1956, two of the three floodwater retarding structures planned for this watershed were under construction and will be completed by December, 1956. The Soil Conservation District easement committee is working on easements for the third structure which is scheduled for construction in fiscal year 1957.

The Forest Service has the entire area of woodland, approximately 27,800 acres, under fire protection and has planted 243 acres of trees to stabilize severe sediment producing areas.

Farmers in the watershed have planted 493 additional acres to trees. To date 208 acres of galled and gullied land have been planted to grasses and legumes to stabilize severe sediment producing areas. The Virginia Department of Highways has assisted in the seeding and planting of 25 miles of highway banks to stabilize these severe sediment producing areas.

WASHINGTON

Mission Creek Pilot Watershed

Total Estimated Federal Cost	\$ 348,000
Total Obligations through June 30, 1956	200,237

As of June 30, 1956, two and one-half miles of streambank and channel stabilization had been completed as well as three miles of channel capacity improvement.

Experimental plantings of native shrubs, volga wild rye, southern wood, crown vetch and a variety of grass mixtures had been made in an attempt to stabilize the loose soil.

As of June 30, 1956, 17 district cooperators with 1,542 acres had been applying conservation measures in the Mission Creek watershed. Conservation measures applied included cover crops, fertilizing, hay and pasture seedings, and deferred and rotational grazing. Soil surveys and range site and condition surveys had been completed on all 11,680 acres of private lands.

Spring Valley Creek

Total Obligations through June 30, 1956	\$ 4,293
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Authorization for this project was withdrawn at the request of the sponsors effective May, 1954.

WEST VIRGINIA

Salem Fork of Ten Mile Creek Pilot Watershed

Total Estimated Federal Cost	\$ 296,000
Total Obligations through June 30, 1956	249,068

As of June 30, 1956, 7 out of the 8 floodwater detention structures had reached the contract stage and construction had been completed and earth fills seeded to perennial grasses and legumes on 5 of them. Construction work was started in early July on the other 2 structures. Field surveys had been completed and a design was in the early stages for the final structure. All planned

channel improvement work had been installed. Easements and rights-of-way for structural works of improvement valued at \$18,341 : had been provided by the local watershed association.

Of the estimated 115 landowners in the watershed, 88 are now soil conservation district cooperators. About 35 percent of the planned land treatment measures have been installed. Cooperating landowners have furnished and planted 425,000 tree seedlings under the technical supervision of the West Virginia State Conservation Commission. About 20,000 additional trees have been planted on critical sediment source areas. All forest land is under forest fire protection.

Upper Grave Watershed (P.L. 566)

Total Estimated Federal Cost	\$ 275,093
Total Obligations through June 30, 1956	\$ 706

The sponsoring local organizations in this watershed are the Northern Panhandle Soil Conservation District, the Cameron Planning Commission and the City Council of Cameron, West Virginia. The watershed covers an area of approximately 4,900 acres in Marshall County, West Virginia. Approximately 15 percent of the watershed is cropland, 75 percent is grassland and woodland and 10 percent is miscellaneous, such as towns, roads, etc.

The major works of improvement planned for this watershed consist of 7 floodwater retarding structures and 3.6 miles of stream channel improvement. These structural measures will be operated and maintained by the sponsoring organizations.

Some of the principal land treatment measures planned in the watershed include planting trees on 380 acres of steep land and improving the cover on 1,100 acres of pasture. Approximately 500 acres of cropland will be converted to permanent hay. All plowing will be done on the contour and in contour strips where practical. The land treatment measures will be installed, operated and maintained by the landowners in the watershed.

WISCONSIN

West Fork of Kickapoo Pilot Watershed

Total Estimated Federal Cost	\$ 153,000
Total Obligations through June 30, 1956	\$ 133,274

There are 196 farms in the West Fork of the Kickapoo Pilot Watershed Project, comprising 17,945 acres of land. As of June 30, 1956 there was a total of 150 soil conservation district cooperators and 88 basic farm conservation plans. One of the floodwater detention structures planned was complete except for seeding. The second structure was under construction and was about 63 percent complete.

Land treatment measures established as of June 30, 1956, included 4,707 acres of contour strip cropping, 19 miles of terraces, 5 miles of diversions, 2.4 miles of outlets and waterways, 332 acres of pasture planting, and 2,821 acres of fire protection. Establishment of contour strip cropping was about 70 per cent complete. Other land treatment measures were about 30 percent established.

SURVEYS AND INVESTIGATIONS OF WATER RESOURCES PROGRAMS

Agency Participation

Funds available for surveys and investigations of river basin areas for program coordination purposes have been allocated to the cooperating agencies in the Department as follows:

	: 1956	: 1957	: 1958
	: Obligations	: Estimate	: Estimate
Soil Conservation Service.....	:\$ 142,978	:\$ 767,580	: \$ 775,000
Forest Service.....	: 23,672	: 126,328	: 83,000
Agricultural Research Service....	: 20,442	: 175,000	: 181,000
Total.....	:\$ 187,092	:\$1,068,908	:\$ 1,039,000

River Basin Activities

Section 6 of the Watershed Protection and Flood Prevention Act (P.L. 566, 83rd. Congress) authorizes the Secretary of Agriculture to cooperate with other Federal, State, and local agencies to make investigations and surveys of the watershed of rivers and other waterways as a basis for the development of coordinated programs. Executive Order 10584 prescribes rules and regulations relating to the administration of the Watershed Protection and Flood Prevention Act and directs the Departments of the Army, Interior, and Agriculture to coordinate their resources planning work.

Review of Lower Mississippi and Tributaries Project Begun

Early in the fiscal year 1956, the Department of Agriculture was requested by the Corps of Engineers to cooperate in a review of its Lower Mississippi and Tributaries Project. This project proposal would have a major influence upon the agriculture of the area and is closely related to watershed improvements needed on watershed lands.

The Soil Conservation Service, Forest Service, and Agricultural Research Service are participating in the work with funds made available under this item. Work plan parties and specialists have assembled data, made field investigations, analyzed data, and started the preparation of reports on the agricultural aspects of various sub-areas.

A field advisory committee consisting of representatives from these three agencies has been established to coordinate the various phases of the Department's work. The Soil Conservation Service is primarily concerned with the soil and water conservation and watershed improvement phases of the review. The Forest Service is primarily concerned with forest production possibilities and values and with the forestry aspects of watershed improvement in the area. The Agricultural Research Service is conducting analyses of the economic aspects of various possible uses of land and water resources and the impact of such uses on local or national production requirements. The work covering all agricultural phases is being performed by sub-areas or tributary streams for coordination with the Corps of Engineers' proposals for flood control, major drainage undertakings, and other activities for which it has responsibility.

Cooperation with the Department of
Interior in the Upper Colorado Storage Project

By direction of the President, the Department of Agriculture in cooperation with the Department of the Interior, plans to reappraise the direct agricultural benefits expected to be produced by the designated participating projects of the Colorado River Storage Project, which was approved by the Congress on April 11, 1956. It will also study the impacts of that project upon lands and improvements administered by this Department and the relationship between project features and appurtenances and the watersheds in which they are situated.

Preliminary understandings have been reached with representatives of the Department of the Interior about the conduct of this work, and plans for participation by concerned agencies of the Department and for securing the cooperation of the Land Grant Colleges in the States of Colorado, New Mexico, Utah, and Wyoming have been started. The Soil Conservation Service, Forest Service, and Agricultural Research Service have been the primary Department agencies active in the work to date. A field advisory committee consisting of representatives of these agencies has been established. Representatives of the Farmers Home Administration and the Land Grant Colleges have occasionally participated. Investigations and studies on some of the 11 presently authorized Bureau of Reclamation Colorado River projects are expected to extend over at least three additional years.

Cooperation with the Corps of Engineers
on the Delaware River Survey

During the fiscal year 1956, the Department of Agriculture was requested by the Corps of Engineers to cooperate in preparation of a Delaware River Basin Water Resources Survey Report based on a projection of at least 100 years. Particularly desired was information on agricultural demands for water and how they might be met by conservation practices or irrigation; demands for livestock watering; reforestation needs; prospective encroachment on farming areas by municipal and industrial expansion; increased demands for farm produce; the effect of soil conservation techniques on low and high stream flows

and on sedimentation above dam sites. Preliminary arrangements were developed in the field in response to this request and exploratory discussions have been held with representatives of the Corps of Engineers to determine the size and kind of staff, basic data available, work schedules, etc. involved. The cooperative studies are expected to continue into the fiscal year 1958.

Departmental Representation in Other Areas

The Department is also represented on the Inter-Agency Committee on Water Resources which has been established to facilitate coordination of investigations and surveys by the various member departments and agencies. Much of this work is done in the field. This requires that the Department maintain representation on various River Basin Inter-Agency Committees, which serve as points of contact between representatives of this Department and of other member departments and agencies in these basin areas, to keep all concerned mutually informed of investigations and surveys proposed and under way by the member agencies. The Department in 1956, maintained such representation in the Missouri, Columbia, Arkansas-White-Red River Basins and Pacific Southwest areas. Similar representation is to be maintained in the New England-New York area and in the north central and southeastern areas. There are also prospects of requests for cooperation in the investigations and surveys of the Upper Mississippi, Kansas, and Potomac Rivers.

(c) Flood Prevention

Appropriation Act, 1957 and base for 1958	\$12,000,000
Budget Estimate, 1958	13,220,000
Increase	<u>+1,220,000</u>

SUMMARY OF INCREASES, 1958

Increase to accelerate the installation of flood prevention works of improvement and conservation land treatment in the eleven watersheds authorized by the Flood Control Act of 1944	+1,011,000
For contributions to the retirement fund pursuant to Public Law 854	+209,000

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement:		
			Costs	Other	
			(P.L.854)		
1. Preliminary examinations and surveys	\$34,370:	- -:	- -:	- -:	- -:
2. Works of improvement	9,936,554:	a/\$12,000,000:	+\$209,000	+\$1,011,000(1):	\$13,220,000
Total retirement costs (P.L.854) ..	- -:	- -:	[+209,000]	[+12,000]	[221,000]
subtotal	9,970,924:	12,000,000:	+209,000(2):	+1,011,000	13,220,000
1955 appropriation available in 1956 ..	-1,707,998:	- -:			
1956 appropriation available in 1957 ..	+1,740,205:	- -:			
Recovery of prior year obligations ..	-3,131:	- -:			
Total appropriation or estimate	10,000,000:	12,000,000:			

a/ In addition, \$1,740,205 is available from prior year balances of which \$1,615,737 is from funds allocated in 1956 for Works of Improvement, \$60,789 from Preliminary Examinations and Surveys, an activity discontinued in 1956, and \$63,679 from General Basin Investigations, an activity discontinued under this appropriation item in 1955.

INCREASES

(1) An increase of \$1,011,000 to accelerate the installation of flood prevention works of improvement and conservation land treatment in the eleven watersheds authorized by the Flood Control Act of 1944.

Need for Increase: Works of improvement are not being installed in many of the authorized watersheds as rapidly as originally planned and as necessary to prevent serious floodwater and sediment damage to valuable agricultural land and crops and to public and private developments downstream. In many subwatersheds the local people have secured the necessary easements and rights-of-way and have furnished assurance of cost-sharing and maintenance arrangements for structural measures planned to be constructed. However, sufficient funds are not available to meet the Federal share of the construction costs of planned work.

Local organizations in the Middle Colorado River Watershed Project of Texas have all the necessary easements and rights-of-way for more than \$4,000,000 worth of construction work and are ready to proceed at an even faster rate. Also, in the Washita project in Oklahoma, the local people have cleared easements for about \$3,500,000 of construction work and in the Trinity in Texas for about \$5,500,000. In other projects, the local people are not as far ahead as this but are urging that work be accelerated and have demonstrated that they are ready to assume their cost-sharing and project maintenance responsibilities.

Plan of Work: The increase requested would be used to finance the Federal share of the cost of the flood prevention works of improvement to be installed primarily by local contractors and to provide the necessary engineering supervision over construction work. Some acceleration in land treatment work is also proposed with the increase.

The total increase, of \$1,220,000 (\$1,011,000 plus the \$209,000 cost of the Federal contribution to the retirement fund on the salaries included in the 1958 base) would be distributed by watershed, as follows:

Buffalo Creek, New York	\$26,272
Colorado (Middle), Texas	133,136
Coosa, Georgia, Tenn.	49,492
Little Sioux, Iowa, Minn.	57,805
Little Tallahatchie, Mississippi	67,342
Los Angeles, California	89,395
Potomac, Md., Pa., Va., W. Va.	151,044
Santa Ynez, California	15,180
Trinity, Texas	233,644
Washita, Oklahoma	234,031
Yazoo, Mississippi	<u>162,659</u>
Total	<u>1,220,000</u>

(2) An increase of \$209,000 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes.

The total Flood Prevention funds obligated in 1956, amounts available in 1957, and the estimate for 1958, are distributed by watershed in the following table.

The balances carried forward from 1956 include the distribution to watersheds under Works of Improvement of funds that remained unobligated as of June 30, 1956, under the following activities previously carried under this appropriation item:

Preliminary examinations and surveys	\$60,789
General basin investigations	63,679
Total	<u>124,468</u>

Phrases covering these two activities were deleted from the language of the Flood Prevention appropriation for 1956 because of the enactment of the Watershed Protection and Flood Prevention Act of 1954 (Public Law 566). That act repealed the authority of the Department to conduct preliminary examinations and surveys under the authority of the Flood Control Act. It also authorized the Department to make investigations and surveys of the watersheds of rivers and other waterways as a basis for the development of coordinated programs. This work is now included as an activity under the Watershed Protection appropriation item.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

For expenses necessary, in accordance with the Flood Control Act, approved June 22, 1936 (33 U.S.C. 701-709), as amended and supplemented, and in accordance with the provisions of laws relating to the activities of the Department, to perform works of improvement, including not to exceed \$100,000 for employment pursuant to the second sentence of section 706(a) of the Organic Act of 1944 (5 U.S.C. 574), as amended by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a), [at rates for individuals not to exceed \$50 per diem,] to remain available until expended, ***

The change would eliminate the requirement that payments for temporary employment of individuals as experts, consultants, or advisers, may not exceed \$50 per diem. Existing basic law (5 U.S.C. 55a) authorizes payment of per diem rates equivalent to the highest rate payable under the Classification Act of 1949, as amended, unless higher rates are specifically authorized in appropriation or other law.

The highest per diem rate under the Classification Act is now \$51.28. Since the difference between the amount which may be paid under the Classification Act and the present limitation is now insignificant (only \$1.28), it is not believed that special language is warranted and should be deleted in the interest of shortening and simplifying the appropriation bill.



STATUS OF PROGRAM

Current Activities:

The Flood Control Acts provide for the reduction of floodwater, sediment, and erosion damages and the prevention of floods by installation of watershed improvement measures for which the Department of Agriculture is responsible and for control of floods by main-stream control works for which the Department of the Army is responsible. The work of this Department under this item is carried on in the eleven watersheds authorized by the Flood Control Act of 1944, and consists of (a) the preparation of detailed subwatershed or functional work plans which specify the kind of improvements to be installed for flood prevention, their location, and the work schedule, (b) the installation of works of improvement, such as diversions, dikes, gully-stabilizing and water-retarding structures, debris and desilting basins, floodways, stream-channel improvement, fire protection and woodland improvement measures, etc., to reduce flood, erosion, and sediment damage and retard runoff and control its movement into the main streams, and (c) the acceleration of land treatment measures to prevent erosion and protect the structural works of improvement from flood and sediment damage. Proposed improvements by the Department are correlated with and designed to protect mainstream work by the Corps of Engineers, the Bureau of Reclamation and others in addition to providing protection to the watershed lands and property above the mainstream works.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department authorized under the Flood Control Acts. The Soil Conservation Service and the Forest Service carry out the planning and installation of flood prevention works of improvement and land treatment measures in the authorized watersheds. The Forest Service activities are concerned with (a) all national forests and other lands in the authorized watershed that are administered by the Forest Service, (b) all range land in or adjacent to national forests and used in conjunction with such forests under formal agreement with the landowner, and (c) certain specialized technical assistance on other forest lands within the watersheds. The Soil Conservation Service activities are concerned with all other private and public lands in the watersheds.

Maintenance Responsibilities

The proper and continued maintenance of installed measures is the key to the long-time effectiveness of the watershed improvement programs. Landowners and operators generally maintain conservation and other measures which benefit primarily the lands upon which they are installed. Local units of Government have the responsibility to maintain the measures which provide primarily off-site benefits.

Examples of Recent Progress:

Allocation of Funds for Works of Improvement

Funds available for planning and installation of flood prevention works of improvement are allocated between the Soil Conservation Service and the Forest Service as follows:

Agency	1956 Obligations	1957 Funds Available	1958 Estimate
Soil Conservation Service	\$8,609,000	\$11,916,372	\$11,316,500
Forest Service	1,173,770	1,523,833	1,603,500
Emergency Measures	153,784	300,000	300,000
Total	9,936,554	13,740,205	13,220,000

The following table provides a breakdown by watersheds of the allocations for 1957 and 1958 shown above.

Watershed	1957 Funds Available Agency Distribution			1958 Budget Estimate Agency Distribution		
	SCS	FS	Total	SCS	FS	Total
1. Buffalo Creek, N. Y.	\$366,609	\$5,226	\$371,835	\$335,400	\$600	\$336,000
2. Colorado (Mid- dle), Texas ...	1,422,221	--	1,422,221	1,528,000	--	1,528,000
3. Coosa, Ga., Tenn.	543,457	29,648	573,105	542,000	29,000	571,000
4. Little Sioux, Iowa, Minn. ...	842,387	--	842,387	666,000	--	666,000
5. Little Talla- hatchie, Miss.:	942,237	177,352	1,119,589	632,700	184,300	817,000
6. Los Angeles, California	587,107	623,014	1,210,121	311,500	659,500	971,000
7. Potomac, Md., Pa., Va., W. Va.:	568,430	34,380	602,810	588,900	38,100	627,000
8. Santa Ynez, California	29,902	140,606	170,508	10,000	153,000	163,000
9. Trinity, Tex. :	2,520,737	1,800	2,522,537	2,683,000	--	2,683,000
10. Washita, Okla.:	2,497,952	--	2,497,952	2,686,000	--	2,686,000
11. Yazoo, Miss. :	1,595,333	511,807	2,107,140	1,333,000	539,000	1,872,000
12. Emergencies a/:	--	--	300,000	--	--	300,000
Total	11,916,372	1,523,833	13,740,205	11,316,500	1,603,500	13,220,000

a/ Under authority of Section 216 of the Flood Control Act of 1950, not to exceed \$300,000 may be expended each fiscal year for emergency measures

when a fire, flood or any other natural element or force has caused a sudden impairment of the watershed. This amount is not included in the amounts proposed for distribution to the individual watersheds. However, any balances not needed for emergency measures as provided by the act are distributed later in the year to those watersheds where the greatest need exists and where the local people have provided easements and rights-of-way to permit installation of additional works of improvement.

Watershed Work Plans and Improvement Measures

The Department, in cooperation with soil conservation districts, watershed organizations and other local, private, and public agencies, is planning and installing watershed improvement measures in all eleven of the authorized watersheds. As of June 30, 1956 work plans had been developed for 14,275,828 acres or about 47.4 percent of the 30,102,774 acres in the authorized portion of the watersheds. Work plans were revised and developed for 16 subwatersheds of the eleven authorized watersheds during 1956.

The following table lists some of the major watershed works of improvement which were installed cooperatively by the Department agencies and local cooperators in 1956, and those planned to be installed in 1957 and 1958:

Type of Improvement	Unit	On the Land: 6/30/56	1956 Actual	1957 Estimate	1958 Estimate
1. Floodwater retarding structures	Number	382	104	126	183
2. Stabilization and sediment control structures:					
(a) Structures	Number	5,242	1,358	337	515
(b) Debris and desilting basins.	Number	244	--	1,591	1,098
(c) Detention Terraces	Mile	295.0	145.0	97.3	73.0
3. Subwatershed waterway improvement	Mile	11.0	0.3	70.0	111.1
4. Stream channel improvement	Mile	831.4	193.6	105.9	159.4
5. Diversion ditches and dikes	Mile	619.5	168.0	279.8	324.0
6. Floodways (channel excavation)	Mile	19.0	0.7	--	0.3
7. Stabilization of critical runoff and sediment producing areas:					
(a) Roadside erosion control	Mile	2,128.8	434.6	325.0	408.0
(b) Revegetation ...	Acres	181,942	56,614	44,082	59,619

Type of Improvement	: Units	: On the Land: 6/30/56	: 1956 : Actual	: 1957 : Estimate	: 1958 : Estimate
8. Fire protection:	:	:	:	:	:
(a) Fire control	:	:	:	:	:
trails and breaks	: Miles	455.8	: 28	: 21.8	: 62.0
(b) Structures	: Number	94	: 1	: 12	: 33
(c) Heliports and	:	:	:	:	:
helispots	: Number	190	: 15	: - -	: - -
(d) Mobile equipment .	: Number	99	: - -	: 2	: 3
9. Communication facilities:	:	:	:	:	:
(a) Permanent radio	:	:	:	:	:
installation	: Number	338	: - -	: - -	: 16
(b) Telephone lines ..	: Miles	230.0	: - -	: 5.0	: 15.0

Basic Runoff Data Collected

Basic data for runoff and erosion as related to slope and vegetative cover conditions is particularly needed in the Little Tallahatchie and Yazoo Watersheds in Mississippi to design adequate and economical structural measures and effective conservation treatment of the watershed lands. The Southern Forest Experiment Station has started special studies of this nature. Annual summaries showing the results of these investigations will be furnished to the Soil Conservation Service.

Reimbursements of \$21,980 were made in the 1956 fiscal year to the U. S. Geological Survey for collecting rainfall and runoff data in the study area and in four other flood prevention watersheds.

Continuation of these studies will be required for several years to secure data to provide a sound bases for the selection of land treatment measures and adequate design of structural measures.

Emergency Measures

Section 216 of the Flood Control Act of 1950 authorizes the emergency treatment of watersheds impaired by fire or other natural element to prevent serious sediment and flood damage to life and property. Five such watersheds involving 68,400 acres, were treated during fiscal year 1956 at a total cost of \$252,155. Local beneficiaries contributed \$89,480 and the Federal government financed the balance, of \$162,675 from Flood Prevention funds for "emergency measures".

Four of the five areas were located in Southern California, the fifth in Wyoming. Some 317,000 pounds of rapid germinating ryegrass, mustard, brome, or other grasses were sown by airplane or helicopter to provide an immediate protective cover over most of the burned areas. Reseeding results were exceptionally good. In addition, some 47 miles of clogged channels were cleared and 16 miles of eroding fire control lanes and trails were stabilized.

The largest single burned area treated in the vicinity of Santa Barbara, California experienced exceptionally heavy rainfall shortly after seeding operations and channel clearing were completed. About 7.17 inches of rain was received in a 24-hour period which caused some flooding in four canyons and damages were estimated at \$200,000.

General storms occurred over the entire area in January 1956, but no significant damage was reported. Cleaning of the channels of debris aided materially in reducing flood damage during this storm.

Status of Work on Individual Flood Prevention Watersheds

Los Angeles River Watershed

Total Estimated Federal Cost	\$19,350,496
Total Obligations through June 30, 1956	7,600,534

The Soil Conservation Service has assisted private landowners to install planned conservation practices on almost all of the watershed that has a significant effect on the flood problems. The flood channel improvement works are progressing according to schedule in cooperation with the Los Angeles County flood control district and the San Fernando Valley soil conservation district. The urban area of Los Angeles has expanded into a considerable part of the San Fernando valley agricultural area since the start of the project.

The Forest Service, cooperating with the Los Angeles County Fire Department, resumed installation of fire protection improvements in the county protected area of the watershed. Under cooperative agreement between the Los Angeles Flood Control District and the Forest Service, preliminary plans, surveys, and investigations were completed for the construction of nine concrete crib channel barriers in a steep mountain tributary above a highly developed suburban area. The Los Angeles Flood Control District will bear about 44 percent of the construction cost and obtain the necessary easements and rights-of-way. The Forest Service cooperated with the City of Los Angeles and the County of Los Angeles in seeding 2,000 acres of burn and, planting of vegetation to stabilize Los Angeles County flood control dams. It also assisted the Flood Control District in determining the watershed areas needing stabilization above existing structures. Other

accomplishments include the stabilization of 3.3 miles of eroding roadside, revegetating 2,200 acres of critical flood and sediment source lands, and the construction of 20 miles of fire control roads, 12 miles of firebreak, and 15 heliospots for fire protection purposes.

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	1
Debris basins	each	137
Stream channel improvement	miles	20.9
Roadside erosion control	miles	74.5
Diversion ditches and dikes	miles	0.7
Revegetation of critical areas	acres	11,940
Fire Control:		
Roads and trails	miles	74.5
Firebreaks	miles	145
Buildings	each	58
Heliports	each	146
Two-way radio installations	each	130
Telephone lines	miles	24
Mobile fire equipment	each	15

Santa Ynez River Watershed

Total Estimated Federal Cost	\$ 3,791,276
Total Obligations through June 30, 1956	1,634,362

The intensified fire protection effort in the Santa Ynez Watershed was largely responsible for preventing the destructive conflagrations in adjoining watersheds from sweeping through the Santa Ynez Watershed last year. Three thousand acres were pre-planned for the installation of additional fire protection facilities, and 14 miles of fire trail were constructed.

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Stabilizing structures	each	105
Desilting basins	each	3
Stream channel improvement	miles	6.1
Roadside erosion control	miles	103
Revegetation of critical areas	areas	134

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Subwatershed waterway improvement	miles	3.1
Diversion ditches and dikes	miles	14
Floodways	miles	3.1
Fire Control:		
Roads and trails	miles	206
Firebreaks	miles	240
Buildings	each	4
Heliports	each	69
Two-way radio installations	each	21
Telephone lines	miles	11
Mobile fire equipment	each	3

Coosa River Watershed

Total Estimated Federal Cost	\$ 8,147,053
Total Obligations through June 30, 1956	1,445,311

Farm planning is ahead of schedule in the watershed. More than 1,200 farm conservation plans have been developed with farmers cooperating with the 4 soil conservation districts in the watershed. These plans provide for sound conservation treatment on 101,561 acres of the watershed. Significant progress is also being made in the stabilization of road cuts and fills in cooperation with County Commissioners. Eighty acres of critical runoff and sediment producing land were planted to trees by the Department and 115 acres of non-critical land by the landowners in 1956.

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	24
Subwatershed waterway improvement	miles	13.5
Stream channel improvement	miles	50
Roadside erosion control	miles	318
Revegetation of critical areas	acres	11,048
Fire Control:		
Roads and trails	miles	0.8
Buildings	each	3
Two-way radio installations	each	9
Mobile fire equipment	each	7
Lookout towers	each	3
Tree plantings	acres	200

Little Sioux Watershed

Total Estimated Federal Cost \$25,568,552
Total Obligations through June 30, 1956 7,288,618

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	128
Stabilizing structures	each	260
Detention terraces	miles	295
Subwatershed waterway improvement	miles	18.4
Stream channel improvement	miles	53.5
Diversion ditches and dikes	miles	26.4
Floodways	miles	9

Standard level cropland terraces and terraces which intercept runoff water from steep pasture areas, have been established at an accelerated rate in this watershed. Both types of terraces have a remarkable effect in reducing runoff and sediment deposition and a reduction in cost of downstream stabilizing measures are thereby made possible.

Heavy flood producing rains during the year in two subwatersheds provided an opportunity to observe the effectiveness of the floodwater retarding structures installed in the area. All installations operated within the specifications for which they were designed thereby averting damage from floodwater and sedimentation downstream.

Little Tallahatchie River Watershed

Total Estimated Federal Cost \$14,297,289
Total Obligations through June 30, 1956 3,827,113

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	3
Stabilizing structures	each	37
Desilting basins	each	1,311
Revegetation of critical areas	acres	89,831
Roadside erosion control	acres	359.1
Subwatershed water improvement	miles	11.4
Stream channel improvement	miles	123.6

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Diversion ditches and dikes	miles	63.7
Floodways	miles	83.6
Fire Control:		
Buildings	each	8
Mobile equipment	each	19
Lookout towers	each	11
Telephone lines	miles	14
Two-way radio installations	each	13
Tree planting	acres	3,194

This year farmers of Cane Creek, a subwatershed of the Little Tallahatchie River Watershed, will complete the essential conservation measures they set up as goals in 1949. Completion of these conservation measures will bring back into high production over 2,000 acres of valley land. More than half of this land has been unsafe for row crops for several years.

According to John Stewart, Chairman, Cane Creek Watershed Association, "We feel we have about reached our objectives in tying down with trees and grass all of the severely eroding land within the watershed. About 95 percent of the people of the watershed are cooperating."

Since the initiation of this project in 1947 some 24,000 acres of actively eroding farm land has been planted to trees to permanently heal these eroded lands. During the past year landowners planted 2 million pine seedlings in addition to more than 10 million seedlings planted by Departmental employees and contractors.

Fire control improvements have been installed cooperatively with the State of Mississippi in 96 percent of the watershed area which reduced the number of fire occurrences in the past ten years from 500 in 1947 to slightly less than 120 in the past year. The majority of these 120 fires occurred in the 3 counties within the watershed which had not received intensified fire protection prior to September 1955. The total burned area in the watershed was reduced from 15,000 acres to less than 4,800 acres during the same period.

Yazoo River Watershed

Total Estimated Federal Cost	\$39,339,364
Total Obligations through June 30, 1956	6,181,377

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	8
Stabilizing structures	each	338
Desilting basins	each	3,317
Subwatershed waterway improvement	miles	114
Stream channel improvement	miles	551.6
Diversion ditches and dikes	miles	473.1
Revegetation of critical areas	acres	133,570
Roadside erosion control	miles	1,011.1
Tree planting	acres	7,500

Of particular significance in this watershed is the increasing interest of local people in organizing into watershed groups so that the watershed organization can collect funds for cost-sharing and secure rights-of-way. It seems likely that within the next two years requests for assistance in comprehensive flood prevention programs will be presented by six or seven organized watershed districts.

Since the initiation of this project in 1947 some 46,000 acres of actively eroding farm land has been planted to trees to permanently heal the eroded lands. During the past year landowners planted some 10 million pine seedlings in addition to more than 20 million seedlings planted by the Forest Service and the Soil Conservation Service.

Fire control improvements have been installed cooperatively with the State of Mississippi in 82 percent of the watershed area which has reduced the number of fire occurrences in the past ten years from 8,500 in 1947 to about 1,880 in the past year. The majority of these fires the past year occurred in the four counties within the watershed which had not received intensified fire protection prior to September 1955. The total burned area in the watershed was reduced from 235,000 acres to less than 75,200 acres during the same period.

Buffalo Creek Watershed

Total Estimated Federal Costs	\$4,671,594
Total Obligations through June 30, 1956	2,227,150

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Stabilizing and Sediment Control		
Structures	each	107
Stream channel improvement	miles	60.5
Diversion ditches and dikes	miles	2.2
Revegetation of critical areas	acres	262.8

The local people have been very cooperative in granting easements to carry out stream bank protection works in this watershed.

Washita River Watershed

Total Estimated Federal Cost	\$47,642,429
Total Obligations through June 30, 1956	10,577,237

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	130
Stabilizing structures	each	223
Stream channel improvement	miles	27.3
Roadside erosion control	miles	2.4

Local rains of severe intensity have occasionally provided an opportunity to observe the effectiveness of the flood prevention works of improvement installed in this watershed. For example, on September 25 and 26, 1955, the upper portion of the Chigley-Sandy subwatershed received 7.7 inches of rain of high intensity. One floodwater retarding structure had been completed prior to the storm. No evidence of flood damage occurred in this subwatershed as a result of the storm, whereas, the nearby Cherokee Sandy subwatershed in which works of improvement have not been installed had all bottomland flooded with a high percentage of the fall crops completely destroyed.

The City of Duncan, Oklahoma has voted bonds in order to finance its share of the construction costs of structures designed for combining flood storage and a municipal water supply. In addition, the city purchased the necessary land, easements and rights-of-way for five structure sites to permit the installation of the dams included in the system. The State of Oklahoma has appropriated \$50,000 for use by soil conservation districts in this watershed to secure easements. At one time the lack of easements had prevented moving ahead with the installation of structural

measures, however, easements have been furnished in a number of sub-watersheds far in advance of the date construction may begin.

Sections of the Washita watershed have suffered from severe drought conditions. This has caused considerable delay in the establishment of some land treatment measures. Fair progress has been made in the establishment of pastures but range seeding has been retarded because of a shortage of suitable grass seeds.

In Grady County considerable interest has been shown in the installation of drop inlets and drop spillways to stop the progress of active gullies which have been contributing tremendous silt loads to the flood plains of the watershed. Also, the installation of terraces, ponds and waterways were at a faster rate this past year than any period during the last six years.

Potomac River Watershed

Total Estimated Federal Cost \$15,510,070
Total Obligations through June 30, 1956 1,196,598

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	8
Stream channel improvement	miles	33.8
Roadside erosion control	miles	117.7
Revegetation of critical areas	acres	7,869
Fire Control:		
Roads and trails	miles	19.5
Fire breaks	miles	9
Telephone lines	miles	43
Lookout towers	each	5
Woodland grazing control	acres	2,700
Tree planting	acres	975

Two floodwater detention structures were built in 1955 on the Warm Springs Run subwatershed in West Virginia and three more will be installed during the calendar year 1956. The Potomac Valley Soil Conservation District has contributed the equivalent of at least \$575 in labor and equipment

for a road relocation job incident to one structure. Sponsors have also contributed the equivalent of \$1,800 in securing easements and rights-of-way. Procurement of easements in this subwatershed is a detailed, time consuming job since almost every structure site is involved in an heirship of two to ten persons, residing at widely scattered points over the United States. Nevertheless all easements have been furnished commensurate with the construction schedule.

Middle Colorado River Watershed

Total Estimated Federal Cost \$29,870,697
Total Obligations through June 30, 1956 2,647,735

The major works of improvement that were installed or under contract as of June 30, 1956 are:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	21
Diversion ditches and dikes	miles	3.3
Floodways	miles	5.2

Five soil conservation districts within the Middle Colorado River Watershed jointly organized a soil conservation district supervisor's association to assist subwatershed groups in the acceleration of land treatment application, assure adequate maintenance of completed watershed protection measures, and assist in developing work schedules for work plan development and installation of works of improvement.

Local people have been very active in securing easements well in advance of possible construction. All easements were secured on the Clear Creek subwatershed and construction of floodwater retarding structures is underway in this watershed as well as in the Brady Creek Subwatershed.

As of June 30, 1956 there were 4,618 district cooperators in the watershed which represents an increase of 50 new cooperators during the past year. Seventy percent of these district cooperators had conservation plans developed on their farms or ranches or 48 percent of the total land area in the watershed. The Soil Conservation Service has assisted cooperators in applying conservation practices during the year on 1,065 farms and ranches. Continuous severe drought conditions in the Middle Colorado River

Watershed has reduced the application of conservation practices on the land. Most of the area is utilized as range land and has been heavily used. Due to this condition, the heavy rain storms in early May caused an unusually high rate of runoff which resulted in considerable silt and flood damage to stockwater and farm ponds and overflow areas.

Trinity River Watershed

Total Estimated Federal Cost \$80,274,576
Total Obligations through June 30, 1956 12,107,352

The major works of improvement that were installed or under contract as of June 30, 1956:

<u>Measures</u>	<u>Unit</u>	<u>Number of units</u>
Floodwater retarding structures	each	110
Stabilizing structures	each	79
Diversion ditches and dikes	miles	15.5
Floodways	miles	1.6

The City of Kaufman purchased all needed easements and rights-of-way for one structure in the Big Cottonwood Creek subwatershed, and paid 22.7 percent of the total cost of the structure in order that it could be designed and constructed as a joint floodwater retarding and municipal water supply reservoir.

Local people throughout the Trinity River Watershed have been successful in acquiring easements well in advance of possible construction. One outstanding example is in the Lower East Fork Laterals subwatershed where 126 easements were required, necessitating over 300 signatures. The value of these easements was \$122,700.

Approximately 61 percent of the total land in the watershed was under cooperative agreement at the end of the 1956 fiscal year and 58 percent of the district cooperators had conservation plans developed on their farms and ranches. Farm and ranch planning and application of soil conservation practices were carried on in addition to the installation of structural improvements. During the period land treatment measures were applied on 10,053 farms and ranches. Almost 7,700 district cooperators were assisted in carrying out some part of their conservation plan or approximately 31 percent of the total district cooperators were assisted during the period by Soil Conservation Service technicians. Technical time available for direct assistance to districts in the watershed was slightly less than for the same period in 1955.

Continued drought in the upper portion of this watershed has retarded the application of practices on the land. An unusually dry fall during 1955 prevented the planting of winter legumes. Seeding and sodding of dams has likewise been affected.

(a) Water Conservation and Utilization Projects

Appropriation Aat, 1957 and base for 1958	\$232,000
Department Estimate, 1958	350,000
Increase	<u>+118,000</u>

SUMMARY OF INCREASES, 1958

Increase to provide for maintenance of land development work on the Eden Valley, Wyoming, project in 1958 at about the current level of operations	+110,300
For contributions to the retirement fund pursuant to Public Law 854	+ 7,700

PROJECT STATEMENT

Project	1956	1957 (estimated)	Increase or Decrease		1958 (estimated)
			Retirement Costs (P.L.854)	Other	
Development of land for irrigation ..	\$348,743	a/\$232,000	+\$7,700	(1)+\$110,300	\$350,000
Unobligated balance brought forward ..	-474,500	- -	- -	- -	- -
Unobligated balance carried forward ..	+125,757	- -	- -	- -	- -
Total retirement costs (P.L. 854) ..	- -	- -	[+7,700]	- -	[+7,700]
Total appropriation or estimate ..	- -	232,000	+7,700(2)	+110,300	350,000

a/ In addition, \$125,757 available from prior year balance.

INCREASES

(1) An increase of \$110,300 to provide for the maintenance of land development work on the Eden Valley, Wyoming, project in 1958 at about the current level of operations.

Need for Increase: The Eden Valley project in Wyoming is the only remaining active project being developed under the authority of the Case-Wheeler Act. Land development work on this project had been delayed for many years for a number of reasons. The latest problem involved securing legislation to authorize the exchange of project lands for adjacent land better suited for irrigation. Land exchanges have been made with the Department of Interior and the State of Wyoming under authority of Public Law 377, approved May 28, 1954. Land leveling and other development work can now proceed as planned.

The Eden Valley project authorization provides for operations being carried on at a rate which will enable completion of all irrigation development work and final sale of the developed farm units by December 31, 1961. Full-scale operations are being carried on in 1957 with the \$232,000 appropriated for 1957 and with unobligated balances from prior years amounting to \$125,757 some of which were placed in budgetary reserve in 1956 specifically for use in 1957. The increase proposed would provide maintaining in 1958 approximately the same level of operations as in 1957. Development work includes farm unit surveys, land leveling, installation of laterals and other water distribution structures and drains, and seeding of developing areas to cover crops to prevent wind erosion. Operations are scheduled at the most efficient rate.

(2) An increase of \$8,000 is required to meet retirement costs under Public Law 854, applicable to the base for 1958. A full explanation of retirement cost estimates appears in the "Preface" at the beginning of the Explanatory Notes.

STATUS OF PROGRAM

Examples of Recent Progress:

Status of Project Development

Nineteen Water Conservation and Utilization Projects were originally authorized for development under the 1940 Department of the Interior Appropriation Act and the "Case-Wheeler" Act of October 14, 1940, as amended. Development of six of these projects is no longer planned due to inflationary land prices and other changes which have occurred since they were authorized. Twelve projects have been completed. One of these, the Angostura project in South Dakota was completed in 1956. The last remaining project which is in Eden Valley, Wyoming, is planned for completion in 1962.

Angostura Project, South Dakota

All land-leveling and sub-division work on the Angostura, South Dakota, project was completed in fiscal year 1955. All remaining farms were sold in 1956 and the project office was closed June 30, 1956. Technical services in farm planning and proper irrigation practices in the future will be provided through the Custer County and Fall River Soil Conservation Districts which include the project area.

Eden Valley Project, Wyoming

Land development for irrigation on the Government-owned land in this project was begun in the spring of 1954. At that time there was before the Congress a proposal to exchange certain of the Federal lands on the project for public domain land held by the Department of the Interior and for lands belonging to the State of Wyoming that were better suited for irrigation farming. After enactment of the enabling legislation (Public Law 377, approved May 28, 1954), negotiations were begun with the Department of the Interior and the State of Wyoming to arrange for the land exchanges. The first transfer of land under this authority was a transfer of a large tract from the Department of Interior to the Department of Agriculture during the fiscal year 1956. Other tracts of land will be transferred in fiscal year 1957. The transfer of lands from the Department of Agriculture to the Department of Interior to complete the exchange will be deferred by mutual agreement until land development for irrigation has been completed. All residual project lands not developed for irrigated farm units will then be conveyed to the Department of the Interior. It is also expected that the land exchanges with the State of Wyoming will be completed during the fiscal year 1957. These land exchanges have made it possible to provide an improved pattern of irrigation farm units on the project. There will be more efficient use of available water supply

and lands that are more suitable for irrigation will be developed. During the period of these adjustments land leveling operations have been carried on at a reduced scale. Full scale operations can now be resumed but completion of land development and final sale of new lands will be extended into the fiscal year 1962. The first group of new irrigated farms will be sold prior to the farming season of 1957.

Obligations by Projects

The following table shows, by project, the actual obligations incurred under this program in 1956 and estimated obligations for the fiscal years 1957 and 1958:

Project	: Actual : F. Y. 1956	: Estimated : F. Y. 1957	: Estimated : F. Y. 1958
Angostura, South Dakota	: \$18,894	: - -	: - -
Eden Valley, Wyoming	: 300,094	: \$331,157	: \$323,400
Total Direct Project Costs.	: 318,988	: 331,157	: 323,400
General Administration	: 29,755	: 26,600	: 26,600
Total Estimate	: 348,743	: 357,757	: 350,000

Development Accomplishments and Work Load

The following table shows some of the more important items of development work planned, the amount completed to date, and the amount remaining to be done:

Item	% : Unit	: Total : Development: : Planned *	: Accomplished : to : 6/30/56	: Remaining to : be done * : 7/1/56
Topographic surveys	: Acre	: 162,541	: 161,478	: 1,063
Land classification	: Acre	: 194,089	: 194,089	: -0-
Unit subdivisions	: No.	: 546	: 546	: -0-
Clearing	: Acre	: 30,661	: 27,158	: 3,503
Leveling	: Acre	: 70,534	: 62,115	: 8,419
Farm laterals	: Mile	: 1,489	: 838	: 651
Farm drains	: Mile	: 596	: 435	: 161
Farm irrigation structures .	: No.	: 9,094	: 7,848	: 1,246

*Revised 6/30/56

Status of Land Development and Farm Sales
as of June 30, 1956

Project	Date Authorized	Irrigable: Acreage	Percent Development Completed	Federally-owned	
				tract	c/
				Total Number	Number Sold
Angostura	:March 6, 1941	: 12,154	: 100	: 105	: 105
Bitterroot	:March 22, 1944	: 18,630	: 8 <u>b/</u>	: -	: -
Buffalo Rapids I	:May 15, 1940	: 14,507	: 100	: 95	: 95
Buffalo Rapids II	:May 15, 1940	: 10,400	: 100	: 110	: 110
Buford-Trenton	:Sept. 23, 1939	: 14,729	: 100	: 134	: 134
Dodson <u>a/</u>	:March 17, 1944	: 1,200	: 100	: -	: -
Eden Valley	:Sept. 18, 1940	: 20,000	: 50	: 59	: -
Intake <u>a/</u>	:Jan. 20, 1944	: 825	: 99 <u>b/</u>	: -	: -
Mancos	:Oct. 24, 1940	: 10,000	: 54 <u>b/</u>	: 2	: 2
Mirage Flats	:March 30, 1940	: 12,000	: 100	: 111	: 111
Missoula <u>a/</u>	:May 10, 1944	: 900	: 100	: -	: -
Newton <u>a/</u>	:Oct. 17, 1940	: 2,225	: 100	: -	: -
Post Falls	:Jan. 29, 1944	: 3,260	: 90 <u>b/</u>	: 17	: 17
Rapid Valley	:Nov. 8, 1939	: 12,000	: - <u>b/</u>	: -	: -
Scofield <u>a/</u>	:May 24, 1943	: 12,500	: 30 <u>b/</u>	: -	: -

a/ Projects include no Federally-owned land.

b/ Projects closed, no further development work contemplated.

c/ In addition there are privately-owned lands within a number of projects on which development work is done.

Project Authorizations and Obligations through 6/30/56

Project	Present	Obligations through June 30, 1956				
	Project	"Wheeler-	"Great	Contri-	Total	
	Authori-	Case "	Plains"	buted		
	zation	Funds	Funds	Funds		
Angostura	\$1,484,000	\$1,399,311	--	--	\$1,399,311	
Balmorhea	569,000	--	--	--	--	
Bismarck	None	--	--	--	--	
Bitterroot	752,000	167,811	--	--	167,811	
Buffalo Rapids I	743,770	99,296	\$210,000	\$424,175	733,471	
Buffalo Rapids II	810,122	319,721	345,000	139,608	804,329	
Buford-Trenton	1,094,000	62,798	762,958	264,838	1,090,594	
Dodson	84,000	51,484	--	--	51,484	
Eden Valley	2,340,000	905,051	154,595	5,061	1,064,707	
Intake	41,000	20,817	--	--	20,817	
Mancos	473,000	366,879	--	--	366,879	
Mann Creek	None	--	--	--	--	
Mirage Flats	687,300	479,152	170,000	36,837	685,989	
Missoula	133,000	65,297	--	--	65,297	
Newton	75,500	74,230	--	--	74,230	
Post Falls	196,000	a/ 196,367	--	--	196,367	
Rapid Valley	170,000	7,117	15,042	--	22,159	
Saco Divide	480,000	--	405	--	405	
Scofield	350,000	119,531	--	12,200	131,731	
Total direct						
Project costs	10,482,692	4,334,862	1,658,000	882,719	6,875,581	
Project investiga-						
tions and surveys ..	--	233,473	--	--	233,473	
General Adminis-						
tration:						
Farm Security						
Administration ..	--	349,091	--	--	349,091	
Office of Pro-						
duction	--	4,137	--	--	4,137	
Office of the						
solicitor	--	59,957	--	--	59,957	
Soil Conser-						
vation Service ..	--	849,289	--	--	849,289	
Total Obligations						
through 6/30/56	--	5,830,809	1,658,000	882,719	8,371,528	

a/ Net obligations after deduction for residual value of equipment is \$186,545.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1956, were actually received or programmed for 1957 or 1958. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
Allotment from:			
<u>Soil Bank Program, Agriculture -</u>			
For counsel and guidance to farmers			
and ranchers in connection with			
converting acreage from crop produc-			
tion to grass and trees and provid-			
ing technical services in the selec-			
tion and establishment of soil and			
water conservation practices	- -	\$4,000,000	\$7,500,000
Allocations and Working Funds			
(Advances from other agencies):			
<u>Atomic Energy Commission - For col-</u>			
lection and preparation of samples			
of soils, plants, and animals for			
calcium and strontium analysis	\$15,643	- -	- -
<u>Department of the Army - For the</u>			
preparation of soil maps, studies			
of soil, trafficability, and state			
of ground and soils	67,020	- -	- -
<u>International Cooperation Administra-</u>			
tion - For expenses in connection			
with training and technical assist-			
ance activity	32,174	34,000	- -
Total, Allocations and Working			
Funds	114,837	34,000	- -
Trust Funds:			
<u>Technical Services and Other Assist-</u>			
ance, Agricultural Conservation			
<u>Program Service - For technical and</u>			
other assistance to farmers and			
ranchers in participating counties			
pursuant to agreements with individ-			
ual Agricultural Stabilization and			
Conservation State and County			
Committees	7,299,812	7,500,000	7,500,000

(Continued on next page)

Item	Obligations, 1956	Estimated Obligations, 1957	Estimated Obligations, 1958
<u>Miscellaneous Contributed Funds,</u>			
<u>Department of Agriculture (deposited</u>			
<u>by cooperators, as follows):</u>			
For flood control works of improve-			
ment on the Los Angeles River			
Watershed	291,552:	202,846:	220,000
For cooperation with the Soil Con-			
servation Commission, State of			
California, in developing cultural			
methods and experimental seed sup-			
plies at the Pleasanton Nursery,			
California	35,167:	30,086:	30,000
For cooperative work in the install-			
ation of watershed protection			
measures, surveys, flood prevention:			
work, etc. in various locations ..	113,991:	141,175:	- -
Total, Miscellaneous Contributed			
Funds, Department of Agriculture	440,710:	374,107:	250,000
Total Trust Funds	7,740,522:	7,874,107:	7,750,000
<u>Obligations under Reimbursements from</u>			
<u>Governmental and Other Sources:</u>			
<u>Conservation Operations:</u>			
For sale of cartographic reproduc-			
tions, cooperative projects with			
State agencies, detail of personnel:			
to other Federal agencies, sale of			
equipment and accessories for which:			
the proceeds are used to purchase			
similar items, etc.	1,921,935:	2,461,445:	3,090,500
<u>Watershed Protection</u>	35,121:	45,262:	63,000
<u>Flood Prevention ;</u>	43,098:	28,193:	31,500
<u>Water Conservation and Utilization</u>			
<u>Projects</u>	1,460:	1,100:	- -
Total Reimbursements	2,001,614:	2,536,000:	3,185,000
TOTAL OBLIGATIONS UNDER ALLOTMENTS			
AND OTHER FUNDS	9,856,973:	14,444,107:	18,435,000

PASSENGER MOTOR VEHICLES

Conservation Operations

The estimates for 1958 provide for the scheduled replacement of 207 passenger motor vehicles during the fiscal year. The estimate considers anticipated transfers of 17 passenger vehicles to General Services Administration motor pools to be established at 2 field locations during the fiscal year 1957. The Service authorizes the use of passenger motor vehicles by area conservationists, technical specialists, survey supervisors and State office personnel for travel where public transportation is inadequate, non-existent or not feasible. As a rule, passenger vehicles are used for travel to several locations in a single day. Frequent stops are made to examine field work or to discuss the soil conservation program with resident technicians at isolated points in the State. It is impossible to use other means of transportation in lieu of these vehicles because of the nature of this travel, the frequency of the stops and the fact that common carrier facilities do not serve the rural areas.

The 207 passenger motor vehicles are estimated to cost \$237,300 after applying the trade-in value of the old vehicles.

Watershed Protection

The estimates for 1958 provide for the replacement of 7 passenger motor vehicles during the year. These vehicles are required by technicians and survey parties for investigation and surveys of proposed small watershed projects and for planning and supervising the installation of works of improvement in authorized watershed project areas. Transportation of two or more technicians or aids is frequently required by the nature of the work. Most watershed project areas are not served by common carrier and the use of pickup trucks is not feasible.

It is estimated that the 7 passenger vehicles will cost \$12,600.

Flood Prevention

Nine passenger motor vehicles are scheduled to be replaced during the fiscal year in the estimates for 1958. These vehicles will replace the same number now in use. They are used by technicians and aids engaged in the installation of works of improvement in the eleven authorized projects.

These employees usually have to travel considerable distances in rural areas where public transportation is inadequate or non-existent and under circumstances where the use of pickup trucks is not feasible.

The nine passenger vehicles are estimated to cost \$10,350 after applying the trade-in value of the old vehicles.

Water Conservation and Utilization

The estimates for 1958 include the scheduled replacement of one passenger vehicle during the year. A similar vehicle is being used by Service technicians engaged in the development of lands for irrigation in the Eden Valley Project, Wyoming.

Technicians and the project supervisor are required to travel in rural areas where the use of public transportation or pickup trucks is not feasible.

This one vehicle is estimated to cost \$1,150 after applying the trade-in value of the old one.

General

The Soil Conservation Service operated 1,059 passenger motor vehicles on June 30, 1956. None of these are used in Washington, D. C., but are distributed among the 51 State and Territorial offices, approximately 300 area offices and various technical specialists located at field headquarters. Resident technicians servicing the farmers and ranchers in soil conservation districts travel in pickup trucks to field areas to conduct surveys and prepare conservation plans, perform engineering work or to lay out conservation practices.

All of the vehicles proposed to be replaced will be well within the standards of 60,000 miles or 6 years of age established by the General Services Administration. Many of these vehicles are so old and have reached such high mileage that they are no longer economical to operate. Many of them are also out of service for repairs frequently and for long periods of time due to general deterioration from age and use.

The policy of the Soil Conservation Service is to replace one-seventh of the inventory each year. This permits replacement of vehicles that have reached seven years of age and have been driven about 70,000 miles. This policy is based on past experience. It has not always been possible to maintain this schedule of replacements.

As of June 30, 1956, the Service had 170 vehicles seven years or older and about 334 with 70,000 miles or more. The Service will replace 235 vehicles during the fiscal year 1957. By June 30, 1957 another 114 will have been in use seven years and more than 124 will likely have been driven more than 70,000 miles. The 235 replacements scheduled for 1957 and the 224 proposed in this estimate for 1958 will bring the fleet replacement back on schedule and permit replacements on a reduced scale in the future within the Service policy.

Passenger cars are not assigned to one individual exclusively at locations where more than one employee has need for the equipment. This allows several employees to use a single car. Also, all employees are

directed by Service policy to coordinate travel to the same locality so as to utilize transportation equipment efficiently. Thus two or more employees are transported in the same vehicle whenever it is feasible.

A table of age and mileage of passenger motor vehicles operated by the Soil Conservation Service on June 30, 1956 follows.

<u>Mileage</u>	<u>Number of Passenger Vehicles</u>	<u>Percentage</u>
0 - 1,000	4	0.4
1,000 - 10,000	121	11.4
10,000 - 20,000	87	8.2
20,000 - 30,000	72	6.8
30,000 - 40,000	92	8.7
40,000 - 50,000	105	9.9
50,000 - 60,000	120	11.3
60,000 - 80,000	249	23.5
80,000 - 100,000	151	14.3
Over 100,000	58	5.5
	<u>1,059</u>	<u>100.0</u>

<u>Year Model</u>	<u>Number of Passenger Vehicles</u>	<u>Percentage</u>
1956	143	13.5
1955	109	10.3
1954	46	4.3
1953	194	18.3
1952	97	9.2
1951	186	17.6
1950	114	10.8
1949	71	6.7
1948	86	8.1
1947	10	0.9
Prior year models	3	0.3
	<u>1,059</u>	<u>100.0</u>

GREAT PLAINS CONSERVATION PROGRAM

Purpose Statement

The Great Plains Program, authorized by Public Law 1021, 84th Congress, provides (a) long-term cost-sharing with farmers and ranchers in designated counties of the ten Great Plains States to aid them to achieve a more stable agricultural production, protect their lands from erosion and develop farming and ranching practices to cope more adequately with the climatic hazards with characterize the area, and (b) technical and other assistance in planning, scheduling and installing the essential soil and water conservation measures, farming systems and land-use adjustments upon which the contracted cost-sharing arrangements are based. Existing agricultural programs of the Department in the Great Plains have also been directed toward helping farmers and ranchers make the adjustments needed to protect their soil and water resources and achieve a more stable agriculture.

A Great Plains Inter-Agency Group, consisting of representatives of the Soil Conservation Service, Agricultural Conservation Program Service, Agricultural Marketing Service, Agricultural Research Service, Commodity Stabilization Service, Farmers' Home Administration, Federal Crop Insurance Corporation, Federal Extension Service, Forest Service and Office of Information, have been designated on a continuing basis by the Secretary of Agriculture to assure effective coordination of all Departmental resources in the program. The Soil Conservation Service has been assigned general responsibility for the Great Plains Conservation Program and the representative of that Service is chairman of the Inter-Agency Group. Full cooperation of State and local governmental agencies and of other groups, organizations, and individuals having an interest in or affected by the program will be encouraged.

	<u>1957</u>	Budget Estimate, <u>1958</u>
Appropriated funds	--	\$20,000,000

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GREAT PLAINS CONSERVATION PROGRAM

Appropriation Act, 1957 and base for 1958	- -
Budget Estimate, 1958	\$20,000,000
Increase	<u>20,000,000</u>

SUMMARY OF INCREASES, 1958

For cost-sharing assistance to farmers and ranchers in the Great Plains in installing soil and water conservation practices	+17,600,000
For technical services and operating expenses	+ 2,400,000

PROJECT STATEMENT

Project	1956	1957	Increase	1958 (estimated)
1. Cost-sharing assistance: to farmers	- -	- -	+\$17,600,000(1)	\$17,600,000
2. Technical services and operating expenses	- -	- -	+2,400,000(2)	2,400,000
Total retirement costs (P.L. 854)	- -	- -	[+82,500]	[82,500]
Total appropriation or estimate	- -	- -	+20,000,000	20,000,000

INCREASES

Need for Increase: The Great Plains, which includes land in the States of Colorado, Kansas, Montana, Nebraska, New Mexoci, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming, is an area of extreme climatic variations. Periodically, severe droughts, high winds, and high-intensity rainstorms plague large sections of the area and cause heavy damage and economic losses. During periods of drought and seasonal high winds, severe damage to cropland and grazing lands occurs from wind erosion. These damaged land areas are also highly susceptible to further severe damage by occasional intense rainstorms. These problems are aggravated when land, which is marginal from the standpoint of adequate moisture and cover, is used for cultivated crops. It is estimated that only about one-third of the affected area in the Southern Plains is suitable for continuous cropping under proper management. The remaining acreage in the Southern Plains and considerable areas in the Northern Plains are subject to varying degrees of damage from wind erosion. During the past several years large sections of the Great Plains States have suffered from especially severe drought conditions. Lands which have in the past been used primarily for the production of small grain and row-crops, and deteriorated range lands, are devoid of protective covering leaving millions of acres exposed to the hazards of severe wind erosion. Nearly 10 million acres were damaged during the 1955-56 blow

season and an additional 9.4 million acres were in condition to blow. About 2.5 million acres of growing crops were destroyed as a result of wind erosion in the spring of 1956.

Land use and treatment problems in this area are complex because of erodible soils, extreme climatic variations and recurring droughts, variability in the size of farm units, resources of the farm operators, and their experience and desires. Technical assistance is needed by local farmers and ranchers in planning for the best possible use of their land and to help establish practices which will protect it from erosion hazards and conserve available moisture supplies. In order to make necessary conversions from cropland to grassland and install needed conservation practices farmers and ranchers must be assured of continuing cost-sharing assistance over the period of years required to make planned adjustments on the land.

Increases to provide the needed technical and financial assistance are proposed as follows:

- (1) An increase of \$17,600,000 for cost-sharing assistance to farmers and ranchers in the Great Plains under long-time contracts for making essential land conversions and establishing soil and water conservation practices.

Plan of Work: Under the Great Plains program authorized by Public Law 1021, 84th Congress, the Secretary of Agriculture would enter into long-time contracts of not to exceed 10 years and ending not later than December 31, 1971, to provide financial assistance to farmers and ranchers. Federal funds would be committed for sharing the cost of the eligible conservation practices to be progressively installed by the farmer or rancher during the contract period in accordance with his farm plan developed for the purpose of this program.

In the contract, the farmer or rancher would agree to (1) carry out a plan of farming operations which incorporates such soil and water conservation practices and principles as may be determined to be practicable for maximum mitigation of climatic hazards, (2) follow a schedule of proposed changes in land use, and (3) install with cost-sharing assistance, approved soil and water conservation practices designed to provide maximum protection to the farm or ranch and the area generally. It is planned that the rate of cost-sharing will average not more than 80 percent of the cost of the changeover.

The farmer or rancher would be permitted to utilize the land in grass cover for grazing purposes consistent with good range management. Cost-sharing assistance under the program would be available for conservation measures on other land on the farm than that being shifted if the conservation measures are a necessary part of the land-use adjustment.

The proposed program differs from the Agricultural Conservation Program in that it offers advance commitments of Federal funds for sharing the cost of installing soil and water conservation practices during a maximum contract period of 10 years and requires satisfactory performance of a proper soil and water conservation program for the entire farm or

ranch unit. It also differs from the Conservation Reserve part of the Soil Bank Program in that it is aimed at obtaining adjustments in land use rather than a reduction in production obtained through an annual rental payment. The program encourages a stabilized agriculture, including permanent shifts in the land use, to meet conditions peculiar to the Great Plains area.

It is estimated that for the first year of the program, \$17,600,000 would cover the full amount of contract obligations over a maximum ten-year period for those contracts which would be consummated in the fiscal year 1958.

(2) An increase of \$2,400,000 for technical assistance to farmers and ranchers in the Great Plains in developing farm and ranch conservation plans (including essential land conversions) and establishing soil and water conservation practices, and for other operating expenses.

Plan of Work: Technical assistance (including forestry) would be provided in designated counties in the Great Plains States to assist farmers and ranchers develop comprehensive soil and water conservation plans and apply the planned conservation measures on their farms and ranches to protect their land from further deterioration.

Experienced technicians would be assigned to assist those farmers and ranchers who request this service, to plan the adjustments in land use, cropping systems, and conservation practices necessary on their particular farm or ranch to provide maximum protection from wind and water erosion. The individual farm or ranch conservation plan would provide a sound basis for scheduling the cost-sharing, credit, layout, and installation of conservation measures. These integrated plans and performance schedules for each farm or ranch will express the farmer's or rancher's decision with respect to the alternative assistance programs available to him through the Department or other agencies. A number of agencies of the Department and of the States will necessarily be called on for advice and participation.

Going programs of Departmental and other agencies may provide the financial assistance required by some of the farmers or ranchers to make the needed adjustments in land use and install the planned conservation practices. However, in most cases a contract under this program committing Federal funds in advance for sharing the cost of the conservation work with the farmer or rancher over a period of several years is anticipated.

Additional technical specialists and aides would be assigned to perform the necessary lay-out work for the conservation practices designated in the farm or ranch conservation plans and would supervise the installation of such practices. As the program progresses it will be necessary for Departmental technicians to certify compliance with the contract provisions and to determine the farmer's or rancher's eligibility for the cost-sharing assistance provided for by the contract.

EXPLANATION OF LANGUAGE

The estimates include new language for this time as follows:

For necessary expenses to carry into effect a program of conservation in the Great Plains area, pursuant to section 16(b) of the Soil Conservation and Domestic Allotment Act, as added by the Act of August 7, 1956 (70 Stat. 1115 - 1117), \$20,000,000, to remain available until expended.

The proposed language provides funds to carry into effect a Great Plains Conservation Program authorized by Public Law 1021, 84th Congress, approved August 7, 1956, which will supplement existing conservation programs in designated counties in the Great Plains.

Under this program Federal Cost-sharing Assistance will be furnished to farmers and ranchers in designated counties in the Great Plains area under contracts entered into with the Secretary for a period not to exceed ten years. Public Law 1021 provides that the total Federal cost-sharing under the program shall not exceed \$150,000,000 and for any program year shall not exceed \$25,000,000. The proposed appropriation of \$20,000,000 for 1958 provides \$17,600,000 for cost-sharing assistance under contracts entered into during the fiscal year 1958 and \$2,400,000 for technical assistance in the planning and application of conservation practices and operating expenses in carrying out the program during the fiscal year 1958.

Additional Information With Respect to the Need For,
and Explanation of, the Great Plains Conservation
Program

Land Use Adjustments Needed

The 10 Great Plains States contain 37 percent of the Nation's land area and 40 percent of its cropland. This is an important agricultural area since it is normally the source of about 60 percent of the wheat and 35 percent of the cattle produced in the United States. The Great Plains Region is subject to major recurring climatic variations which periodically produce widespread suffering and heavy economic losses. Because of the character of some soil in the area and the normal low rainfall pattern, some 11 to 14 million acres of the land now cropped cannot be cultivated continuously without producing serious problems of wind erosion during periods of seasonal high winds. Some improperly used grazing lands are also subject to severe wind erosion following these drought periods. This area is also highly susceptible to damage by high intensity rainstorms. Less than one third of the affected area in the Southern Plains is estimated to be suitable for continuous cropping even under proper management. The conversion of land to its proper use is of major importance to the area.

Recurring Droughts and Wind Erosion

During the late 1930's and again since 1950, large areas of the Great Plains States have suffered from severe drought. Large areas of cultivated and grazing lands are depleted of residues and devoid of protective cover. Each season since 1953 the area damaged by wind erosion has exceeded that in the dust bowl of the thirties. Nearly 10 million acres were damaged during the 1955-56 blow season and an additional 9.4 million acres were in condition to blow. About 2.5 million acres of growing crops were destroyed by wind erosion in the spring of 1956.

On December 1, 1956 the wind erosion outlook was alarming for the 1956-57 blow season. Almost 31 million acres had already been damaged or were in condition to blow at that time. The attached map shows a comparison of the area subject to severe wind erosion during the 1935-36 and 1955-56 blow seasons and the area in which severe wind erosion is likely to occur during the 1956-57 blow season. The following table illustrates the comparative land conditions in each of the Great Plains States at the same time of year for the past 3 blow seasons.

Comparative Status of Wind Erosion Conditions
as of December 1, 1954, 1955, and 1956

	Area Damaged or Land in Condition to Blow		
	1954	1955	1956
	Acres	Acres	Acres
Southern Great Plains:			
Colorado	5,373,000	3,778,000	5,457,000
Kansas	5,463,000	5,914,000	11,081,000
New Mexico	1,420,000	760,000	1,212,000
Oklahoma	1,130,000	1,156,000	2,000,000
Texas	6,968,000	4,981,000	6,906,000
Subtotal	20,354,000	16,589,000	26,656,000

Comparative Status of Wind Erosion Conditions
as of December 1, 1954, 1955, and 1956
(Continued)

	Area Damaged or Land in Condition to Blow		
	1954	1955	1956
	Acres	Acres	Acres
Northern Great Plains:			
Montana	958,000	655,000	592,000
Nebraska	912,000	1,285,000	1,401,000
North Dakota	1,044,000	889,000	1,121,000
South Dakota	1,886,000	386,000	658,000
Wyoming	2,036,000	472,000	474,000
Subtotal	6,836,000	3,687,000	4,246,000
GRAND TOTAL	27,190,000	20,276,000	30,902,000

Nearly 26 million acres or 86 percent of the area in critical condition December 1, 1956, was reported in the 5 Southern Great Plains States. About 84 percent (24 million acres) of the total critical area is land used for cropland and 4 million acres is rangeland.

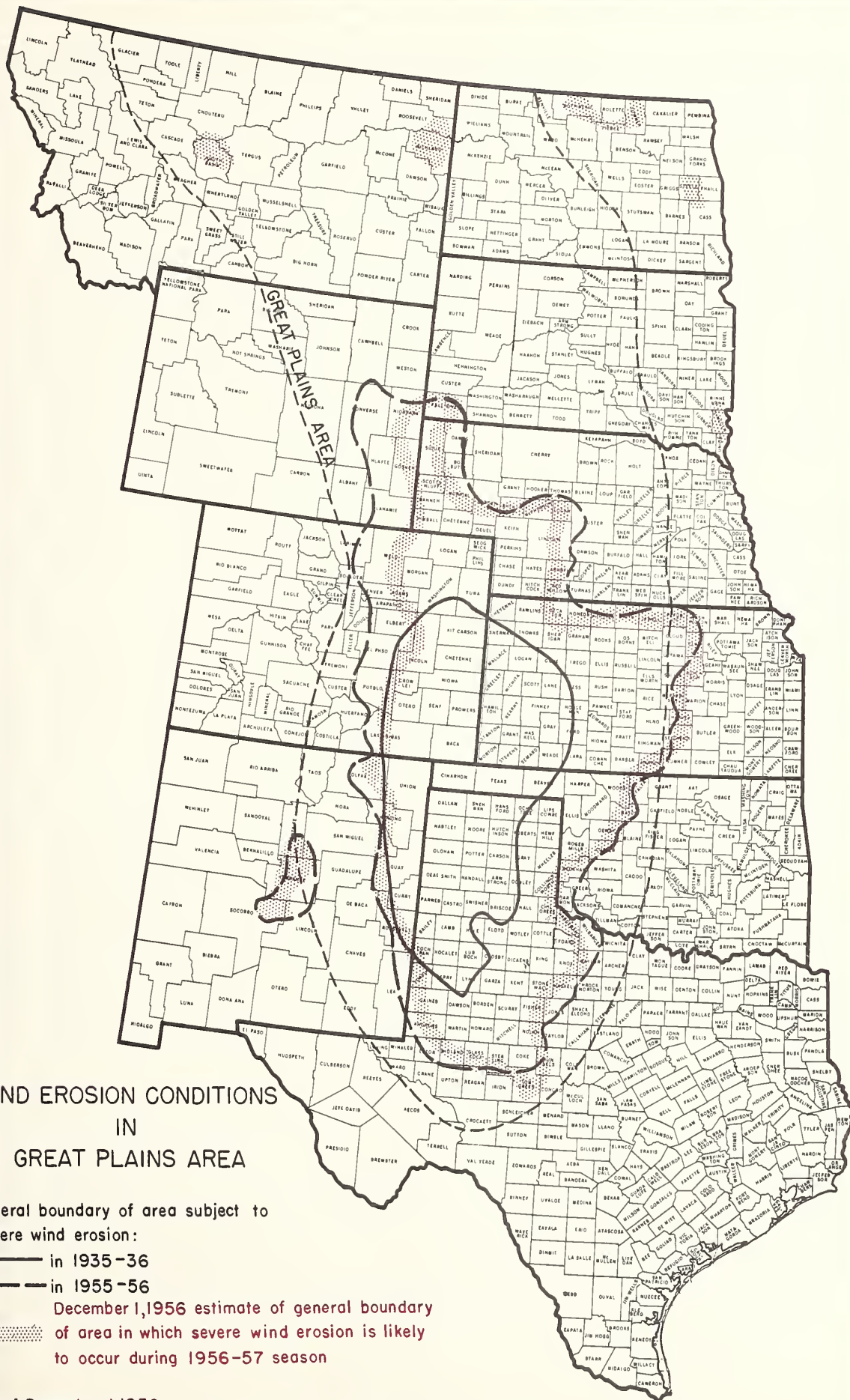
The amount of this land actually damaged by the end of the blow season will depend on such factors as the intensity of grazing on grassland, crop residues, and, the type, velocity and duration of windstorms, the amount and frequency of rainstorms, and the effectiveness of emergency tillage in blow areas.

Land Treatment Measures Reduce Damage

The establishment of land treatment measures is very difficult and hazardous because of the erodible soils and extreme climatic variations and recurring droughts. An effective vegetative cover must be maintained on all land in the Great Plains area subject to wind erosion. Measures must be planned to take advantage of the weather cycle. Stubble mulching and proper management of residues is needed to protect land used for cropland. Strip cropping, contouring, and level terracing are needed to conserve water for crop production. Reseeding some of the cropland and the depleted ranges to grass, fencing, and the development of water facilities needed for proper use are required to protect these lands. Emergency measures such as deep plowing and chiseling are used as a temporary measure to reduce wind erosion on bare lands.

Size and Ownership of Farm and Ranch Units a Problem

Another problem in the Great Plains area is the size and type of farm and ranch units. Units should be large enough to assure efficient operation from the standpoint of in-puts of labor, machinery and equipment. Also, holdings must be large enough to allow the small operator to make the necessary land-use changes and to utilize those soils subject to wind erosion less intensively.



In many areas continued intensive cultivation is a common practice of speculative operators who own little land themselves but lease scattered tracts from absentee owners. Often one such operator may farm several thousand acres. Proper land use for many of the farms will require a change in economy based on grass and livestock rather than clean-tilled cash crops.

Current Activity in Great Plains

Going programs of various Departmental, State, and local agencies have already assisted many landowners and operators to adjust their land use and install erosion control measures of a permanent nature. Federal cost-sharing has been offered for emergency tillage during the critical blow seasons to reduce the wind erosion damage. It is recognized that such measures do not provide for a lasting solution to the problem. Soil surveys and land classification has been accelerated in 166 critical wind erosion counties. This inventory, as it is completed, will provide data essential for program direction and adjustments locally and nationally. It will be basic to the development of individual conservation farm and ranch plans and valuable in making tax and other adjustments.

Research on many phases of the problems of this area has been initiated or strengthened. Investigations are underway on weather and weather forecasting, crops and cropping systems, livestock production and marketing, costs of production shifts and land use changes, wind and water erosion control measures, farm economics and other problems directed specifically to the Great Plains area.

Technical assistance for soil and water conservation on-the-farm has been accelerated and the cost-sharing program adjusted. Federal credit programs have been tailored for the area. Private and cooperative lending sources are moving ahead to better serve farmers and ranchers. Legal problems in the various States and counties are being studied to determine appropriate legislative, tax valuation, and regulatory adjustments. Extension education has been intensified to keep both the rural and general public informed.

A Long-Range Remedial Program Planned

The Great Plains Program provides for focusing a wide variety of authorities on the problems that confront individual farm operators on the land. To achieve the goal of a more stable agriculture, dependable farm and ranch income and a progressively more satisfactory livelihood for the people of this vast region, there must be widespread use of good soil management and water conservation practices. In large areas of marginal farm production this will require significant adjustments in sizes and types of farming units to enable the individual farmers or ranchers to effectively cope with the climatic hazards of the region.

A long-time program of planned soil and water conservation measures and land use adjustments will be worked out with individual producers in accordance with the physical capabilities of each farm or ranch. To assist the farmer develop a feasible plan and actually make the needed adjustments will require effective coordination of all possible sources and types of assistance appropriate to that individual farm situation - soils, climate, farm size, type of farming operation and financial requirements.

Available assistance in farm credit, soil surveys and land classification, conservation farm and ranch planning, technical and cost-sharing assistance to install conservation measures, crop insurance, acreage allotments and price supports, conservation and acreage reserves will be used as needed for the individual farm or ranch unit plan.

Cost-Sharing Contracts With Operators

In addition to existing authorities voluntarily selected by the individual farm or ranch operator to help him solve his land-use and erosion problems, long-term cost-sharing contracts will be available under the Great Plains Program. Each contract between the farmer or rancher and the Secretary will include a long-range plan of farming operations and a schedule of proposed changes in cropping systems and land-use designed to protect the farm or ranch from erosion and deterioration by natural causes. Under the terms of the contracts the Government will agree to share the cost of carrying out the conservation practices set forth in the contracts. The average share of the cost estimated to be paid by the Government is expected to be approximately 80 percent. Such contracts will be offered in counties designated by the Secretary in the following 10 States; Colorado, Kansas, New Mexico, Oklahoma, Texas, Montana, Nebraska, North Dakota, South Dakota, and Wyoming. Farmers or ranchers will be entirely free to determine whether or not to enter into these contracts which will be offered for periods up to ten years but must be terminated not later than December 31, 1971. Participation in this program will not be made a consideration in the administration of any other farm program, and will not affect the farm acreage allotment.

Wide Agency Program Participation

Ten Departmental Agencies will actively participate in this program. The Soil Conservation Service has been designated as the agency responsible for program administration. Operating policies and procedures, with the approval of the Secretary, are being developed by a permanent Inter-Agency Group consisting of representatives from all the Departmental agencies concerned, with the representative from the Soil Conservation Service serving as chairman. In addition, other Federal, State and local agencies and organizations will advise and assist at both the National and local levels and are expected to discharge their obligations in this endeavor insofar as their authorities and resources permit.

AGRICULTURAL CONSERVATION PROGRAM SERVICE

Purpose Statement

The Agricultural Conservation Program is authorized under the provisions of sections 7 to 17, inclusive, of the Soil Conservation and Domestic Allotment Act, as amended.

The purposes of the Act include (1) restoring and improving soil fertility, (2) reducing erosion caused by wind and water, and (3) conserving water on land. To effectuate these purposes, the Agricultural Conservation Program offers cost-sharing assistance to individual farmers and ranchers in all of the 48 States, Alaska, Hawaii, Puerto Rico and the Virgin Islands for carrying out approved soil-building and soil-and-water conserving practices on their farms. This assistance represents only a part of the cost of performing the practice. The farmer bears the balance of the cost and in addition supplies the labor necessary to carry out the practice. Allocations are made to States based upon conservation needs.

Cost-sharing assistance is offered only for the practices considered necessary to meet the most urgently needed conservation problems of the farm, which would not otherwise be carried out to the extent needed. To be eligible for cost-sharing the farmer must make application therefor before beginning the practice.

Conservation measures for which cost-sharing assistance is offered, include practices primarily for:

1. Establishment of permanent protective cover.
2. Improvement and protection of established vegetative cover.
3. Conservation and disposal of water.
4. Establishment of temporary vegetative cover.
5. Temporary protection of soil from wind and water erosion.

Cost-sharing assistance is available in the form of:

1. Partial payment of the purchase price of materials and services needed by the farmer for carrying out approved practices, or
2. Partial reimbursement to farmers who have carried out approved practices at their own expense.

Materials and services are obtained through local private sources where practicable.

Rates of assistance vary by practices and by States and areas so as to make the most effective use of available funds.

	Appropriated, <u>1957</u>	Budget Estimate, <u>1958</u>
Appropriated funds	\$227,500,000	\$237,000,000

AGRICULTURAL CONSERVATION PROGRAM

	On Direct Appropriation Basis	On Program Authorization Basis
Appropriation Act, 1957 and base for 1958	\$227,500,000	\$250,000,000
Budget Estimate, 1958	<u>237,000,000</u>	<u>250,000,000</u>
Increase	<u>+9,500,000</u>	<u>- -</u>

SUMMARY OF INCREASES AND DECREASES, 1958 (on basis of program authorization)

Decrease in cost-sharing assistance to farmers in carrying out conservation measures	-1,736,900
Increase in operating expenses of Agricultural Stabilization and Conservation county committees.....	+1,438,000
Increase in expenses for Forest Service in connection with the Naval Stores Conservation Program	+10,000
Increase in operating expenses for Agricultural Conservation Program Service	+33,275
Contributions to the retirement fund pursuant to Public Law 854 applicable to the base for 1958	+255,625

The Agricultural Conservation Program is operated on a program or crop year basis and cost-sharing assistance is given to farmers upon completion of approved measures. Funds for cash payments earned under the 1956 Agricultural Conservation Program, which closed on December 31, 1956, were made available in the Department of Agriculture and Farm Credit Administration Appropriation Act, 1957. In that Act, the Congress also authorized the formulation and administration of a \$250 million program for 1957 for which this estimate is submitted.

This estimate of \$237,000,000, together with \$13,000,000 of balances under the 1955 program, will provide for the full \$250,000,000 authorized for the 1957 program.

PROJECT STATEMENT (on basis of program authorizations)

Item	Appropriation: 1956 (1955 Program)	Appropriation: 1957 (1956 Program): (Estimated)	Increase or Decrease		Appropriation 1958 (1957 Program) (Estimated)
			Retirement Costs (P.L. 854)	Other	
AGRICULTURAL :	:	:	:	:	:
CONSERVATION:	:	:	:	:	:
PROGRAM :	:	:	:	:	:
1. Cost-shar-	:	:	:	:	:
ing assist-	:	:	:	:	:
ance to :	:	:	:	:	:
farmers ... :	\$187,905,603:	\$223,874,450:	- -	-\$1,736,900(1):	\$222,137,550
Other pro-	:	:	:	:	:
gram expenses	1,288,625:	1,427,550:	+\$32,500:	- -	1,460,050
Total pro-	:	:	:	:	:
gram ex-	:	:	:	:	:
penses .. :	189,194,228:	225,302,000:	+32,500:	-1,736,900	223,597,600

(Continued on next page)

Item	Appropriation:	Appropriation:	Increase or Decrease		Appropriati
	1956 (1955 Program)	1957 (1956 Program) (Estimated)	Retirement Costs (P.L. 854)	Other	1958 (1957 Progr (Estimated)
2. Operating					
expenses:					
County com-					
mittee ex-					
penses:					
ASC county:					
committees	18,378,200:	19,816,385:	- -	+1,438,000(2):	21,254,
Forest					
Service ..	98,024:	107,815:	+4,400:	+10,000(3):	122,
Total county					
committee :					
expenses ..	18,476,224:	19,924,200:	+4,400:	+1,448,000	21,376,
National and:					
State Office					
expenses: :					
Agricultur-					
al Conser-					
vation :					
Program :					
Service :	424,245:	487,959:	+26,516:	+33,275(4):	547, 3
Commodity :					
Stabili-					
zation :					
Service :	471,701:	482,725:	+21,605:	- -	504, 3
ASC State :					
Committees	3,641,040:	3,787,931:	+169,814:	- -	3,957, 4
Forest :					
Service :	10,925:	15,185:	+790:	- -	15, 7
Total Na-					
tional and:					
State					
office					
expenses :	4,547,911:	4,773,800:	+218,725:	+33,275	5,025, 0
Total oper-					
ating					
expenses :	23,024,135:	24,698,000:	+223,125:	+1,481,275	26,402, 0
Total retire-					
ment costs	[- -] :	[- -] :	[255,625]:	[+1,175]	[256,80
Total obliga-					
tions	212,218,363:	250,000,000:	- -	- -	250,000, 0

(Continued on next page)

Item	:Appropriation:		Increase or Decrease		:Appropriation
	1956	1957	Retirement		
	:(1955 Program):	:(1956 Program):	Costs	Other	:(1957 Program)
		(Estimated)	(P.L. 854)		(Estimated)
adjustments:	:	:	:	:	:
Difference	:	:	:	:	:
in amount	:	:	:	:	:
used for	:	:	:	:	:
purchase of:	:	:	:	:	:
conservation	:	:	:	:	:
materials	:	:	:	:	:
and services	:	:	:	:	:
from prior	:	:	:	:	:
fiscal year:	:	:	:	:	:
appropria-	:	:	:	:	:
tion for	:	:	:	:	:
current pro-	:	:	:	:	:
gram and	:	:	:	:	:
amount used:	:	:	:	:	:
for such	:	:	:	:	:
purchases	:	:	:	:	:
from current	:	:	:	:	:
fiscal year:	+\$5,614,067:	+\$7,000,000:	- -	-12,000,000	-\$5,000,000
Transferred	:	:	:	:	:
from 1955	:	:	:	:	:
Agricultural	:	:	:	:	:
Conservation	:	:	:	:	:
Program for:	:	:	:	:	:
Emergency	:	:	:	:	:
Conservation	:	:	:	:	:
Measures .	+25,000,000:	- -	- -	- -	- -
Available for	:	:	:	:	:
repayment	:	:	:	:	:
of Loan to	:	:	:	:	:
Commodity	:	:	:	:	:
Credit Cor-	:	:	:	:	:
poration .	+7,667,570:	- -	- -	- -	- -
Received by	:	:	:	:	:
loan from	:	:	:	:	:
CCC	-43,450,000:	-43,450,000:	- -	- -	-43,450,000
Repayment of	:	:	:	:	:
loan from	:	:	:	:	:
CCC	+7,450,000:	+13,966,593:	- -	+21,483,407	+35,450,000
Other	- -	-16,593:	- -	+16,593	- -
Appropriation:	:	:	:	:	:
or estimate :	214,500,000:	227,500,000:	+255,625(5):	+9,244,375	237,000,000

ADVANCE AUTHORIZATION FOR THE 1958 AGRICULTURAL CONSERVATION PROGRAM

The 1958 Budget estimates include a proposed authorization of \$250,000,000 for the 1958 Agricultural Conservation Program, the same as that authorized by the Congress for the 1957 program.

INCREASES AND DECREASES

(1) A decrease of \$1,736,900 in cost-sharing assistance to farmers for carrying out approved conservation measures in order to provide for an increase of \$1,481,275 for operating expenses and \$255,625 for contribution to the retirement fund as explained below.

(2) An increase of \$1,438,000 for county committee expenses.

An increase of \$1,438,000 for county committee expenses which represents this appropriation's share of the second year's cost of a three-year program to improve the effectiveness of county committee operations by increasing salaries of county office employees to a level at least commensurate with their responsibilities and competitive with those paid by Federal agencies and private industry in the same area. More information with respect to this proposal is contained in the justification of the item "Acreage Allotments and Marketing Quotas".

(3) An increase of \$10,000 in operating expenses of the Forest Service in connection with the Naval Stores Conservation Program.

An increase of \$10,000 for the Forest Service for employment of an Area Forester and temporary help in connection with the Naval Stores Conservation Program. These employees are needed to assist small woodland owners in adopting better naval stores practices in order to conserve timber.

(4) An increase of \$33,275 for operating expenses of the Agricultural Conservation Program Service.

An increase of \$33,275 in order to more effectively administer the program in the field. An exhaustive study of the effectiveness and adequacy of the field operations of the Agricultural Conservation Program indicates the need for expanding the activities of the field review staff. The present limited staff (3) must, of necessity, largely confine its activities to (a) working with State ASC committees and field representatives of Federal, State, and private agencies and organizations which are concerned with conservation problems to coordinate agricultural conservation program activities with other activities being carried out in the field of conservation and (b) reporting to the Administrator on the effectiveness of field administration of the Agricultural Conservation Program. In order to increase the efficiency and effectiveness of the program it is proposed to increase the field review staff by two so that the staff will be in position to assist the ASC State committees on the technical and program aspects involved in formulating and operating State and county Agricultural Conservation Programs and in adapting National program provisions to specific local needs.

(5) An increase of \$255,625 is required to meet retirement costs under P.L. 851 applicable to the base for 1958. A full explanation of retirement costs appear in the "Preface" at the beginning of the Explanatory Notes.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

- 1 For necessary expenses to carry into effect [the provisions of sections 7 to 17, inclusive,] the program authorized in sections 7 to 15, 16(a) and 17 of the Soil Conservation and Domestic Allotment Act, approved February 29, 1936, as amended (16 U. S. C. 590g - 590(o), 590p(a)-590q), including not to exceed \$6,000 for the preparation and display of exhibits, including such displays at State, interstate, and international fairs within the United States; [\$227,500,000] \$237,000,000, to remain available until December 31 of the next succeeding fiscal year for compliance with the program of soil-building [practices] and soil- and water-conserving practices authorized under this head in the Department of Agriculture and Farm Credit Administration Appropriation Act, [1956] 1957, carried out during the period July 1, [1955] 1956, to December 31, [1956] 1957, inclusive:
- 2 Provided, That not to exceed [\$24,698,000] \$26,402,400 of the total sum provided under this head shall be available during the current
- 3 fiscal year for [salaries and other] administrative expenses for carrying out such program, the cost of aerial photographs, however,
- 4 not to be charged to such limitation; but not more than [\$4,773,800] \$5,025,800 shall be transferred to the appropriation account
- 5 "Administrative expenses, section 392, Agricultural Adjustment Act of 1938": [Provided further, That payments to claimants hereunder may be made upon the certificate of the claimant, which certificate shall be in such form as the Secretary may prescribe, that he has carried out the conservation practice or practices and has complied with all other requirements as conditions for such payments and that the statements and information contained in the application for payment are correct and true, to the best of his knowledge and belief, under the penalties of title 18, United States Code:] Provided
- 6 further, That none of the funds herein appropriated [or made available for the functions assigned to the Agricultural Adjustment Agency pursuant to the Executive Order Numbered 9069, of February 23, 1942,] shall be used to pay the salaries or expenses of any regional information employees or any State information employees, but this shall not preclude the answering of inquiries or supplying of information at the county level to individual farmers: Provided further, That such
- 7 amount shall be available for [salaries and other] administrative expenses in connection with the formulation and administration of the [1957] 1958 program of soil-building [practices] and soil- and water-conserving practices, under the Act of February 29, 1936, as amended (amounting to \$250,000,000, including administration, and no participant shall receive more than \$1,500, except where the participants from two or more farms or ranches join to carry out approved practices designed to conserve or improve the agricultural
- 8 resources of the community) [; but the payments or grants under such programs shall be conditioned upon the utilization of land with respect to which such payments or grants are to be made in conformity with farming practices which will encourage and provide for soil-building and soil- and water-conserving practices in the most

- practical and effective manner and adapted to conditions in the several States, as determined and approved by the State committees appointed pursuant to section 8 (b) of the Soil Conservation and Domestic Allotment Act, as amended (16 U. S. C. 590h (b)), for the respective States]: Provided further, That not to exceed 5 percentum of the allocation for the [1957] 1958 agricultural conservation program for any county may, on the recommendation of such county committee and approval of the State committee, be withheld and allotted to the Soil Conservation Service for services of its technicians in formulating and carrying out the agricultural
- 9 conservation program in the participating counties, [and the funds so allotted may be placed in a single account for each State,] and shall not be utilized by the Soil Conservation Service for any purpose other than technical and other assistance in such counties, and in addition, on the recommendation of such county committee and approval of the State committee, not to exceed 1 per centum may be made available to any other Federal, State, or local public agency for the same purpose and under the same conditions: * * *

Other than the usual changes in year dates applicable to the program covered by the appropriation and the period of availability thereof, and minor changes to shorten and simplify the wording of the language, the estimates include proposed changes in the language of the item as follows:

The first change deletes the words "the provisions of Sections 7 to 17, inclusive" and substitutes therefor "the program authorized in sections 7 to 15, 16(a) and 17," and makes corresponding changes in the citation to the U. S. Code. Public Law 1021, approved August 7, 1956, amends section 16 of the Soil Conservation and Domestic Allotment Act, as amended, by adding a new subsection, 16(b), which authorizes a conservation program for the Great Plains. Funds for carrying out such program are being requested under a separate appropriation item, and the authority therefor should consequently be eliminated from this item.

The second change increases the limitation on the total amount which may be used for administrative expenses from \$24,698,000 to \$26,402,400. The increase of \$1,704,400 is composed of an increase of \$223,125 for retirement costs pursuant to Public Law 854, an increase of \$1,438,000, the second year's cost of a three-year program to increase the salaries of ASC county office personnel, an increase of \$33,275 in operating expenses for the Agricultural Conservation Program Service, and increase of \$10,000 for operating expenses for the Forest Service.

The third and seventh changes propose deletion of the words "salaries and other" in connection with reference to administrative expenses for the purpose of shortening and simplifying the wording of the language. This change will not affect the nature or scope of the work in any way.

The fourth change increases the amount which may be transferred to the appropriation account "Administrative expenses, section 392, Agricultural Adjustment Act of 1938" from \$4,773,800 to \$5,025,800. The increase of \$252,000 is composed of an increase of \$218,725 for retirement costs pursuant to Public Law 854 and an increase of \$33,275 for operating expenses for the Agricultural Conservation Program Service.

The fifth change deletes the language providing that payments may be made upon the certificate of the claimant that he has carried out the practice and has complied with all other requirements upon which payments are conditioned. This language is no longer needed since similar language is included in section 6(a) of the Department of Agriculture Organic Act of 1956, approved August 3, 1956 (P. L. 979).

The sixth change deletes the words "or made available for the functions assigned to the Agricultural Adjustment Agency pursuant to the Executive Order Numbered 9069, of February 23, 1942." This reference is obsolete and unnecessary since the Agricultural Adjustment Agency was abolished in 1945 and Executive Order 9069 terminated six months after the end of World War II. The prohibition contained in the proviso will continue to apply to the funds appropriated under this item, as in the past.

The eighth change deletes the proviso that payments or grants shall be conditioned upon the utilization of land with respect to which such payments are to be made in conformity with farming practices which will encourage and provide for soil building and soil- and water-conserving practices in the most practical and effective manner and adapted to conditions in the several States, as determined and approved by the ASC State committees. It is no longer necessary to retain this language in the appropriation act since a similar provision is now included in section 6(b) of the Department of Agriculture Organic Act of 1956, approved August 3, 1956 (P. L. 979).

The ninth change deletes the language providing that funds allotted for services of technicians may be placed in a single account for each State. It is no longer necessary to retain this authority in the appropriation act since similar authority is contained in section 6(b) of the Department of Agriculture Organic Act of 1956, approved August 3, 1956 (P. L. 979).

The first part of the paper is devoted to a general discussion of the problem of the origin of life. It is shown that the problem is not only a scientific one, but also a philosophical one. The scientific aspect of the problem is concerned with the question of how life first appeared on the earth. The philosophical aspect is concerned with the question of whether life is the result of chance or of necessity.

In the second part of the paper, the author discusses the various theories of the origin of life. He shows that the most plausible theory is that of spontaneous generation. This theory holds that life first appeared on the earth as a result of the spontaneous generation of organic molecules from inorganic matter.

The third part of the paper is devoted to a discussion of the evidence in support of the theory of spontaneous generation. The author shows that the evidence is very strong. It is based on the fact that organic molecules can be synthesized from inorganic matter in the laboratory. This fact shows that the conditions for the spontaneous generation of organic molecules are not too far removed from the conditions that existed on the earth at the time of the origin of life.

In the fourth part of the paper, the author discusses the implications of the theory of spontaneous generation. He shows that the theory has important implications for our understanding of the origin of life. It shows that life is not the result of chance, but of necessity. It is the result of the laws of chemistry and physics.

STATUS OF PROGRAM

Background

Conservation of agricultural soil and water resources is recognized as essential to the present and future well-being of the Nation. Not only is it essential to assure a continued supply of food, fiber, and shelter for an increasing population, but also to supply the greater part of the raw materials that go into the expanding economy of the Nation. Farms and forests supply annually over 70 percent of all raw materials used in the economy of the country. Transporting, processing, financing, and handling these raw materials to make them useful and supply them where they are needed make up a large part of all the business and commerce that furnishes the livelihood for the Nation's nonfarm population. Because of their interest in food, fiber, and shelter and a continued healthy economy, non-farm people have perhaps an even greater interest in conservation of soil and water resources than farmers themselves.

There are few, if any, conservation measures that do not require an initial investment in materials, in power, or in labor. Recovery of investment in many needed conservation measures is relatively slow as compared to investment of capital in measures necessary for production of things to sell and produce income. One of the problems in carrying out conservation measures is that the more enduring conservation measures are usually more costly and require a longer period of time before a return on the additional capital investment is realized. Some conservation measures with the greatest permanence will not, of themselves, ever return to the farm operator the capital invested in them.

It is with this background of cost and returns from conservation and the public's dependence upon the conservation of soil and water resources that Federal cost-sharing of conservation practices on individual farms is offered. Research and experimental work have developed and are developing means by which soil and water resources can be conserved. Educational work is teaching the value of and need for conservation effort. Technical services help determine the conservation measures that are needed and furnish engineering and other professional assistance to correctly install them. Federal cost-sharing by the Agricultural Conservation Program helps overcome the economic barriers to carrying out conservation measures. The basic purpose of the Agricultural Conservation Program is to afford a means by which all the people may bear a part of the costs of those measures that would not otherwise be carried out at the rate needed to meet the public interest. It assists farmers to protect the public's interest in the Nation's soil and water resources by sharing with individual farmers and ranchers the cost of carrying out soil-building and soil-and water-conserving practices more rapidly and to a fuller extent than would be practicable through usual farm management practices. The program helps insure continued abundant production for all of the people of the country.

Program Development

Development of the Agricultural Conservation Program begins at the local or county level. The Agricultural Stabilization and Conservation county committee with the assistance of the County Extension Agent and representatives of the Soil Conservation Service, Forest Service, and other local agencies interested in conservation, make recommendations to the Agricultural Stabilization and Conservation State committee. These are summarized by the State committee and used as the basis to formulate joint recommendations of the agencies interested in conservation to the Agricultural Conservation Program Service in Washington.

From these recommendations, the Agricultural Conservation Program Service, the Federal Extension Service, Soil Conservation Service, and Forest Service develop and recommend to the Secretary a national program. State and county committees then develop their programs within the structure of the national program authorized by the Congress and approved by the Secretary.

Program Administration

The Agricultural Conservation Program is administered locally by Agricultural Stabilization and Conservation county committees which are composed of resident farmers elected by farmers they serve. County committees are supervised by Agricultural Stabilization and Conservation State committees composed of resident farmers appointed by the Secretary of Agriculture. The local County Agent is ex officio a member of the county committee and the State Director of Extension holds a like position on the State committee.

State, county and community committeemen are assigned the responsibility for the field administration of the program and work directly with farmers in utilizing program assistance in an effort to get the greatest volume of conservation performed on the land by the farmers themselves. The responsibility for technical determinations in the field regarding designated permanent type practices is assigned to the Soil Conservation Service except for forestry practices, for which responsibility is assigned to the Forest Service.

The Program for 1956

The Department is carrying out the 1956 Agricultural Conservation Program consistent with the authorization contained in the Department of Agriculture and Farm Credit Administration Appropriation Act, 1956. The Department continued the policy of directing program emphasis toward but not limiting assistance to, enduring practices which are essential in the public interest and which farmers or ranchers would not carry out to the desired extent with their own resources, and to practices needed to meet the conservation problems on land being shifted out of production.

States were authorized to operate the 1956 Program concurrently with the 1955 Program in the fall of 1955. Under concurrent programs, State programs for two different years are in operation during the overlapping period of time authorized by the Congress and during which practices performed are eligible for cost-sharing under either program but not both programs.

The Congress approved the requested change in language authorizing the maximum \$10,000 statutory limit on cost shares to any person for the performance of approved conservation measures where the practices are for community benefit and cost shares are pooled for the performance of a practice or practices benefiting the lands of all such persons. This has resulted in more interest in this phase of the program in view of the more realistic limitation for such projects.

The Program for 1957

The 1957 Agricultural Conservation Program of \$250 million authorized by the Congress has been developed and is to be carried out on the following general principles:

"1. The national program contains broad authorities to help meet the varied soil and water conservation problems of the Nation. State and county committees and participating agencies shall design a program for each State and county. Such programs should include any additional limitations and restrictions necessary for the maximum conservation accomplishment in the area. The programs should be confined to the soil and water conservation practices on which Federal cost-sharing is most needed in order to achieve the maximum conservation benefit in the State or county.

"2. The State and county programs should be designed to encourage those soil and water conservation practices which provide the most enduring conservation benefits practicably attainable in 1957 on the lands where they are to be applied.

"3. Costs will be shared with a farmer or rancher only on satisfactorily performed soil and water conservation practices for which Federal cost-sharing was requested by the farmer or rancher before the conservation work was begun.

"4. Costs should be shared only on soil and water conservation practices which it is believed farmers or ranchers would not carry out to the needed extent without program assistance. In no event should costs be shared on practices except those which are over and above those farmers or ranchers would be compelled to perform in order to secure a crop.

"5. The rates of cost-sharing in a county or State are to be the minimum required to result in substantially increased performance of needed soil and water conservation practices within the limits prescribed in the national program.

"6. The purpose of the program is to help achieve additional conservation on land now in agricultural production rather than to bring more land into agricultural production. The program is not applicable to the development of new or additional farmland as a result of drainage. Such of the available funds that cannot be wisely utilized for this purpose will be returned to the public treasury.

"7. If the Federal Government shares the cost of the initial application of soil and water conservation practices which farmers and ranchers otherwise would not perform but which are essential to sound soil and water conservation, the farmers and ranchers should assume responsibility for the upkeep and maintenance of those practices through their life span. The State and county programs shall specify the life span of eligible practices."

A few changes in these principles as compared with the 1956 program have been made and the 1957 program has been developed after consideration by State groups and recommendations by them on program approaches needed to attain the more urgent conservation goals. These principles and the policies developed within them are consistent with and are intended to carry out more effectively the recommendation in the Conference Report on the 1957 appropriation bill that the Department review and modify its requirements on conservation practices to encourage farmer participation and institute changes in practices to liberalize the program.

Specifically, (1) greater authority has been provided for local adaptation of program and practice provisions and for the establishment of rates of cost-sharing considered necessary by State and county groups to get performance of needed conservation and (2) authority has been given to authorize practice assistance for measures which, near the end of the life span of a practice, will materially extend its life span, or to replace a practice which has served for its life span (after appropriate maintenance by the farmer). The authorization under (2) could be given by the county committee if, after taking into account the conservation problems not yet dealt with on the farm, it is determined that appropriate replacement would merit and require public cost-sharing.

The Conference Report directed that the Department revise its procedure in making and revising program fund allocations to counties to meet changes in local conditions. Even though county allocations are always below the level of need for funds for cost-sharing, factors such as lack of understanding of program opportunities, lack of interest, or lack of funds to contribute a share of the cost, have resulted in unused funds in many counties.

States have been instructed to obtain from counties such periodic reports as are necessary to keep currently advised of the progress of the program in each county and to make shifts in funds among counties when necessary. It has also been recommended that the States use the authority to allocate and reallocate funds to counties in order to get a maximum of conservation accomplishment, and to operate concurrent programs to provide the maximum flexibility essential to the full utilization of available funds

The Departmental conservation needs inventory now under way will provide a better understanding of actual and urgent conservation problems to be dealt with, will give States a better basis on which to allocate program and administrative funds to counties, and will bring about a more effective local utilization of funds.

State groups responsible for the development of State programs have been authorized to establish rates of cost-sharing in excess of 50 per cent of the average cost of performing practices which have long-lasting conservation benefits and from which the returns to the farmers or ranchers are remote, where it is essential to obtaining desired performance of these practices. The rate of cost-sharing for these practices, however, will be such that the farmer or rancher will make a substantial contribution toward the cost of performing the practices.

Funds available for program assistance will be distributed among States in accordance with their conservation needs except for the minimum allotment provision contained in both section 15 of the Soil Conservation and Domestic Allotment Act, as amended, and the 1957 appropriation act. Funds for the Naval Stores Conservation Program, cost of aerial photography, program printing, and transfers to the Treasury Department are subtracted before the conservation needs formula is applied. The amount for Naval Stores has been determined in the same manner since 1948 and is based on the need for assistance under the Naval Stores Conservation Program as related to the total funds available for cost-sharing assistance to farmers.

Program Data

Participation under the 1955 Agricultural Conservation Program

Item	:	Unit	:	Total	:	Participating	:	Portion
	:		:	a/	:	a/	:	Participating
	:		:		:		:	Percent
Farms	:	Number	:	5,281,743	:	1,142,021	:	21
Farm land	:	1,000 acres	:	1,224,076	:	418,844	:	34
Cropland	:	1,000 acres	:	477,459	:	173,256	:	36
Noncrop pasture	:		:		:		:	
and range	:	1,000 acres	:	552,285	:	182,493	:	33

a/ Includes United States, Alaska, Hawaii, Puerto Rico and Virgin Islands; excludes Naval Stores Conservation Program; includes 1955 Emergency Wind Erosion Control and 1955 Emergency Flood Programs.

Extent of Selected Conservation Measures Performed Under the
1955 Agricultural Conservation Program and Accomplishments
Under the Agricultural Conservation Programs -- 1936-1955
(Includes emergency practices)

Practice	Unit	Extent Under 1955 Program a/	Total Accomplishments 1936-1955 a/
Dams and reservoirs b/	Number	69,146	1,365,318
Drainage c/	Acre	1,364,917	35,376,957
Leveling land to conserve irriga- tion water and prevent erosion .	Acre	375,459	6,830,901
Standard terraces	Acre	744,028	22,750,910
Diversion and spreader terraces ..	Mile	5,131	115,171
Establishing contour stripcrop- ping d/	Acre	218,685	5,196,152
Stripcropping not on the contour .	Acre	943,793	102,646,320
Control of competitive shrubs on range or pasture	Acre	1,660,680	32,959,625
Tree planting	Acre	150,192	1,468,264
Liming materials applied for conserving purposes	Ton	15,126,347	347,555,466
Permanent sod waterways	Acre	35,653	449,844
All vegetative cover	Acre	12,698,315	707,398,301

a/ Includes completed measures only.

b/ Includes storage-type structures for erosion control, livestock water, and irrigation (new structures only).

c/ Includes open and enclosed type drainages and shaping and leveling.

d/ Includes establishment of cross slope stripcropping.

Emergency Programs

In the past few years, wind erosion, hurricanes, and floods have occurred in various areas of the United States and Puerto Rico, which have resulted in such severe damage to farm lands as to warrant Federal cost-sharing assistance to farmers to return the land to productive agricultural use. The regular Agricultural Conservation Program was adjusted in disaster areas to provide as much conservation land treatment as possible without unduly disrupting the accomplishments of the longer-range Agricultural Conservation Program and particularly where it was possible to divert funds which would not otherwise be utilized. During the three years 1954-1956 farmers and ranchers have received about \$70 million under the Agricultural Conservation Program for applying drought emergency conservation measures on over 49 million acres in 21 States. However, because of the wide-spread conditions and the intense degree of damage, cost-sharing in addition to that provided under the regular program was required for emergency measures to rehabilitate damaged farm lands.

Programs were developed to provide emergency cost-sharing assistance in the Great Plains States where land had been damaged or was in imminent danger of being damaged by wind erosion; in the Eastern Seaboard States and Puerto Rico, where hurricanes and resulting floods had caused substantial damage to farm lands; and in California, Nevada, and Oregon, where torrential rains had caused disastrous floods and had left much of the land in extremely critical condition.

In order that a program could be started immediately, it has been necessary on several occasions to obtain advances from the President's Disaster Relief Fund, pending enactment of legislation either appropriating funds or extending the availability of funds. A total of \$20 million has been appropriated for cost-sharing assistance under the 1954, 1955, and 1956 emergency programs. In addition to the \$20 million, advances totalling \$1.9 million have been obtained from the President's Disaster Relief Fund, which have not yet been repaid. It is anticipated that a supplemental request will be submitted to make available for emergency conservation measures, and for repayment of advances made for this purpose from the President's Disaster Relief Fund, \$25 million of the unearned balances from the 1955 Agricultural Conservation Program.

The following tables show the distribution of the \$20 million appropriated to the Department and of the \$1.9 million advanced in 1957 from the President's Disaster Relief Fund.

Emergency Wind Erosion, Flood, and Hurricane Programs
Estimated Obligations as of 12/11/56

State and Program	1954 Program: (Actual)	1955 Program: (Estimated)	1956 Program: (Estimated)	Total 1954-55-56 Programs
<u>Emergency Wind Erosion</u>	:	:	:	:
<u>Control:</u>	:	:	:	:
Colorado	\$2,268,449	\$2,441,013	\$1,048,000	\$5,757,462
Kansas	1,268,940	635,390	982,000	2,886,330
Nebraska	91,814	207,899	50,000	349,713
New Mexico	838,000	470,000	396,000	1,704,000
Oklahoma	417,065	349,289	216,000	982,354
Texas	2,787,000	1,250,003	1,903,000	5,940,003
Wyoming	----	80,000	9,000	89,000
Total	7,671,268	5,433,594	4,604,000	17,708,862
<u>Hurricane Damage Restor-</u>	:	:	:	:
<u>ation:</u>	:	:	:	:
Connecticut	----	17,254	132,746	150,000
Massachusetts	----	770	49,230	50,000
New Jersey	----	----	3,096	3,096
New York	----	327	158,000	158,327
North Carolina	----	----	300,000	300,000
Pennsylvania	----	2,000	13,024	15,024
Total	----	20,351	656,096	676,447
<u>Flood Damage Restoration:</u>	:	:	:	:
California	----	----	1,000,000	1,000,000
Nevada	----	----	172,500	172,500
Oregon	----	----	397,000	397,000
Total	----	----	1,569,500	1,569,500
Available to reimburse	:	:	:	:
the President's Disas-	:	:	:	:
ter Relief Fund	:	:	:	45,191
Grand Total	:	:	:	20,000,000

Distribution of Advance from President's Disaster Relief Fund

State and Program	:	Amount
<u>Hurricane Damage Restoration:</u>	:	
Massachusetts	:	\$78,000
North Carolina	:	100,000
Puerto Rico	:	1,100,000
Unallocated	:	22,000
Subtotal.....	:	1,300,000
<u>Flood Damage Restoration:</u>	:	
California	:	200,000
Oregon	:	400,000
Subtotal	:	600,000
Total	:	1,900,000

Principal types of emergency measures carried out.

Wind erosion control measures:

Protective tillage (only practice for which cost-sharing assistance is being offered under the 1956 emergency program)
 Establishing protective cover
 Field stripcropping
 Contour seeding close-sown crops
 Spreading wind-blown soil to permit establishing vegetative cover
 Rebuilding standard terraces
 Surfacing clod-forming subsoil

Hurricane and flood damage restoration measures:

Removing flood debris and shaping and leveling farmland
 Restoring drainage systems
 Replacing permanent fences to protect new seedings
 Repairing and replacing irrigation dams, livestock dams, diversion ditches, standard terraces, outlets, sod waterways, etc.
 Applying gypsum or limestone to soils flooded by salt water
 Establishing permanent cover on flood-damaged land
 Restoring stream channels, irrigation ditches, dikes or levees, irrigation pipe lines, etc.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1956 were actually received or programmed for 1957 or 1958. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	: : Obligations, : 1956	: Estimated : Obligations, : 1957	: Estimated : Obligations, : 1958
Allotment from:	:	:	:
Soil Bank Program, Agriculture -	:	:	:
Conservation reserve program	: - -	: \$47,000	: \$49,200
	:	:	:



